Health Care Financing

Research Report

End-Stage Renal Disease, 1985

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Health Care Financing Administration

Health Care Financing

Research Report

The Health Care Financing Administration (HCFA) was established to combine health financing and quality assurance programs within a single agency. HCFA is responsible for the Medicare program, Federal participation in the Medicaid program, and a variety of other health care quality assurance programs.

The mission of the HCFA is to promote the timely delivery of appropriate, quality health care to its beneficiaries—approximately 50 million of the Nation's aged, disabled, and poor. The agency must also ensure that program beneficiaries are aware of the services for which they are eligible, that those services are accessible and of high quality, and that agency policies ad actions promote efficiency and quality within the total health care delivery system.

The Bureau of Data Management and Strategy (BDMS) operates HCFA's statistical data systems and maintains the national Medicare statistical files. BDMS also serves as the focal point within the agency for information systems policy, planning, and data standards development.

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Health Care Financing Research Reports present the results of major studies and projects conducted by HCFA program staff. These reports contain significant findings which affect HCFA programs and are used as the basis for making program changes.

End-Stage Renal Disease, 1985 reflects a wide range of data and analyses regarding the end-stage renal disease program. Much of the data in this report emphasize trends and comparisons over time, making this report a standard reference source which illustrates changes in the nature of the Medicare end-stage renal disease population and in the pattern of treatment of this population.

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End-Stage Renal Disease, 1985

U.S. Department of Health and Human Services
Health Care Financing Administration
Bureau of Data Management and Strategy
Office of Research and Demonstrations
Baltimore, Maryland
September 1987

HCFA Pub.No. 03274

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Acknowledgments

This report could not have been compiled without the help of: Julius Hodges, Sandra Kappert, Helen Mayhew, Michael McMullan, Roger Milam, Patricia Peyton, Kathleen Sagel, Ida Sarsitis, William Shively, and Timothy Lawrence from the Bureau of Data Management and Strategy; Paul Eggers, Ph.D. from the Office of Research and Demonstrations, Health Care Financing Administration; and Dr. Neil Otchin from the Veterans' Administration. Editorial review and production management were provided by Linda F. Kropman-Cantale, Office of Research and Demonstrations.

End stage renal disease, 1985

Executive summary

With the enactment of section 299I of Public Law 92-603 (the Social Security Admendments of 1972), Medicare coverage was extended to persons with end stage renal disease (ESRD), effective July 1, 1973. To be eligible for Medicare ESRD benefits, a physician must certify that an individual requires chronic dialysis or a kidney transplant in order to maintain life. A complete explanation of entitlement provisions is found in Appendix B. Responsibility for implementing this legislation was shared within the Department of Health, Education and Welfare. The then Bureau of Health Insurance within the Social Security Administration was responsible for monitoring Medicare entitlement, utilization, and reimbursement; the then Bureau of Quality Assurance within the Public Health Service was responsible for quality assurance standards, including the development of medical information registries of dialysis and transplant patients, which were incorporated into the Public Health Service's medical information system. With the organization of the Health Care Financing Administration (HCFA) in 1976, the tasks of monitoring Medicare program management and ESRD patient information were brought together.

HCFA is charged with the effective administration of Medicare benefits to qualified persons with ESRD. Integral to the effective management of the ESRD program is the operation of a comprehensive data resource covering medical and program information for the Medicare ESRD population. This data resource, known as the ESRD Program Management and Medical Information System (ESRD PMMIS), was required to be established by Public Law 95-292, section (c)(1)(A). This system was designed to serve the needs of the Department of Health and Human Services in support of program analysis, policy development, and epidemiological research.

The ESRD PMMIS incorporates information both on Medicare ESRD patients and on Medicare-approved ESRD hospitals and dialysis facilities. The principal sources of patient-specific information are the Medicare billing records and incidence-specific medical information forms that report onset of ESRD, characteristics and status of transplant, and cause of death. The principal sources of facility information are the Medicare certification approval notices, the annual treatment survey, and the Medicare cost reports.

The precursor of the current ESRD PMMIS was implemented in 1977. From 1977 through 1980, data collection forms were collected both through the Medicare intermediaries and directly into Medicare central office. These arrangements were less than successful, resulting in a 50-percent rate of noncompliance. In 1981, adjustments were made in the data collection instruments, e.g., tying the reporting of onset of disease to the entitlement process, and enlisting the support of the American Society of Transplant Surgeons in the development of the transplant reporting forms. At the same time the data collection method was changed and all medical information forms began flowing through the ESRD networks. ESRD networks are comprised of a group of ESRD centers in a designated geographical area. Appendixes C and D show the geographic breakdown of these network areas. As a result of these changes, reporting compliance has increased substantially, e.g., more than 91 percent of the transplant information forms were received for kidney transplants performed in 1983 and 1984.

The data that are gathered in the ESRD PMMIS and the resulting analyses of the information represent a confederation of interested components within the Department and of professional organizations representing the interest of the renal medical community. Decisions on the design of the forms, the specifications of the computer analyses, the interpretation of the results, and the preparation of publications are made collaboratively among this community.

HCFA recognizes the need to disseminate the information gleaned from the ESRD PMMIS data and any resulting analyses of these data as promptly as possible. Several of the tables in this report emphasize trends and comparisons over time, making this report a standard reference source illustrating changes in the nature of the Medicare ESRD population and in the patterns of treatment of this population.

Incidence and enrollment

Program incidence

This section describes the trends in Medicare end stage renal disease (ESRD) program incidence for the years 1979 through 1984. Tables are presented which show the new Medicare ESRD enrollee population by age, sex, and race, by State, and by primary diagnosis.

Table 1 shows the total counts of new Medicare ESRD beneficiaries by age, sex, and race. In 1979, 17,209 persons were added to the Medicare enrollment files as ESRD beneficiaries. By 1984 the annual number of new ESRD beneficiaries had risen to 23,979, or an average annual increase of 6.9 percent. By age group, the largest annual increase was for people 65 years of age or over where the annual rate of increase was 12.9 percent.

The annual rate of increase was greater for females (7.1 percent) than for males (6.7 percent) and was greater for all other races (7.5 percent) than for white people (6.6 percent).

In 1984, the rate of increase of new ESRD cases was 4.1 percent. The increase was largest for persons under 25 years of age (6.6 percent), and smallest for persons 65 years of age or over (2.9 percent).

Of the 23,979 new Medicare ESRD beneficiaries in 1984, 71.6 percent were 45 years of age or over; 55.2 percent were male; and 31.9 percent were persons of all other races other than white.

Table 2 shows Medicare ESRD program incidence expressed in terms of rates per million population. From 1979 to 1984, program incidence increased from 76 per million to 102 per million, a 5.9-percent annual increase. Incidence rates are strongly related to age, ranging from 17 per million in the 0-25 age group to 286 per million for the group 65 years of age or over. Males have higher incidence rates (115 per million) than do females (89 per million); and for all other races (217 per million) which is 2.7 times as great as that of white persons (81 per million).

Table 3 shows Medicare ESRD program incidence by primary diagnosis. There has been a significant change in the reporting of primary diagnosis during this 6-year span. Prior to 1981, the cause of renal failure was unknown or unreported for well over 40 percent of new enrollees. In 1982, this dropped to 23 percent. From 1982 to 1984, the percent of unknowns has remained in the 10 to 13 percent range. Because of this large shift in the response rate, it is difficult to determine the "real" changes that have taken place. In 1984, the majority (69.6 percent) of new cases of renal failure were attributed to one of three categories: glomerulonephritis, hypertension, and diabetes. From 1982 to 1984 (the period during which the rate of unknowns seems to have stabilized), diabetes showed the largest rate of increase, from 20 per million to 25 per million (a 12.6-percent annual rate of increase). By 1984, diabetes was the most commonly reported cause of renal failure.

Medicare ESRD program incidence is shown by State in Table 4. As was shown in Table 2, incidence rates are increasing. This is generally the case for individual States as well. In 1979, there were only three States with an incidence rate greater than 100 per million. By 1982, this had increased to seven States. In 1983 and 1984, the number of States with incidence rates greater than 100 per million had increased to 17 and 19, respectively.

Table 1

Medicare end stage renal disease program incidence, by age, sex, and race: 1979-84

Age, sex, and race	1979	1980	1981	1982	1983	1984	Average annual percent increase	1983-84 percent increase
	Number of new enrollees							
Total	17,209	18,732	18,947	20,567	23,026	23,979	6.9	4.1
Age								
Under 25 years	1,460	1,495	1,475	1,566	1,479	1,577	1.6	6.6
25-44 years	4,021	4,442	4,438	4,827	5,034	5,244	5.5	4.2
45-64 years	7,341	7,844	8,072	8,544	8,708	9,128	4.5	4.8
65 years or over	4,387	4,951	4,962	5,630	7,805	8,030	12.9	2.9
Sex								
Male	9,571	10,484	10,520	11,349	12,615	13,235	6.7	4.9
Female	7,638	8,248	8,427	9,218	10,411	10,744	7.1	3.2
Race								
White	11,890	13,086	13,397	14,359	15,676	16,336	6.6	4.2
All other	5,319	5,646	5,550	6,208	7,350	7,643	7.5	4.0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84, as of September 1985.

Table 2

Medicare end stage renal disease program incidence rates per million population, by age, sex, and race: 1979-84

Age, sex, and race	1979	1980	1981	1982	1983	1984	Average annual percent increase	1983-84 percent increase
	Number of enrollees per million population							
Total	76	82	83	89	98	102	5.9	3.2
Age								
Under 25 years	15	16	16	17	16	17	2.1	7.3
25-44 years	66	70	68	71	72	73	2.3	1.3
45-64 years	165	176	181	192	195	204	4.3	4.5
65 years or over	174	193	189	210	284	286	10.4	0.8
Sex								
Male	87	95	94	101	111	115	5.7	4.0
Female	66	71	71	77	87	89	6.1	2.3
Race								
White	61	67	68	72	79	81	5.8	3.5
All other	167	176	169	184	213	217	5.4	1.8

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84; and Census Population Estimates-Series P-25, No. 965.

Table 3

Medicare end stage renal disease program incidence rates per million population, by primary diagnosis: 1979-84

Primary diagnosis	Number of enrollees per million population								
	1979	1980	1981	1982	1983	1984	ACRG[1]	1983-84 percent change	1982-84 ACRG[1]
Total	76	82	83	89	98	102	5.9	3.2	7.0
Glomerulonephritis	9	10	14	20	22	22	19.4	0.7	3.6
Hypertension	9	11	16	21	22	24	21.4	7.9	6.7
Diabetes	8	10	15	20	23	25	25.9	11.5	12.6
Urinary diseases	3	4	4	4	4	4	1.6	-6.4	1.5
Congenital anomalies	3	3	4	5	6	5	12.0	-5.3	5.9
Other	8	8	10	10	10	10	4.5	2.7	.0
Unknown	36	36	19	9	13	11	-20.4	-8.8	12.1

[1] Annual compound rate of growth, all calculations are based on unrounded numbers.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84; and Census Population Estimates-Series P-25, No. 965.

Table 4
Medicare end stage renal disease program incidence rates, by State: 1979-84

State	1979	1980	1981	1982	1983	1984
	Number of enrollees per million population					
United States	76	82	83	89	98	102
Alabama	95	88	85	96	118	104
Alaska	25	35	43	29	35	25
Arizona	81	92	92	89	115	98
Arkansas	63	71	64	68	90	95
California	78	85	86	95	106	104
Colorado	58	63	61	54	59	61
Connecticut	82	81	77	88	111	102
Delaware	78	103	82	103	74	95
District of Columbia	172	208	196	256	252	252
Florida	103	113	111	111	119	125
Georgia	101	96	100	93	109	109
Hawaii	94	90	105	104	102	112
Idaho	39	50	47	58	47	60
Illinois	68	76	81	91	100	105
Indiana	61	64	73	80	91	87
Iowa	57	62	65	64	77	67
Kansas	55	62	62	77	71	77
Kentucky	56	63	70	68	70	76
Louisiana	90	78	92	87	90	108
Maine	42	46	64	50	57	85
Maryland	75	83	88	98	101	110
Massachusetts	66	77	66	82	86	93
Michigan	69	79	76	83	94	105
Minnesota	53	62	66	66	76	80
Mississippi	85	91	70	89	112	108
Missouri	56	72	78	83	84	94
Montana	47	46	85	43	61	75
Nebraska	65	53	78	61	63	65
Nevada	78	86	75	84	105	94
New Hampshire	46	63	69	66	67	68
New Jersey	94	109	100	112	135	119
New Mexico	83	78	72	91	94	83
New York	82	88	84	94	105	107
North Carolina	86	90	82	84	94	92
North Dakota	57	43	53	71	57	74
Ohio	69	73	70	83	90	96
Oklahoma	62	67	67	71	68	78
Oregon	40	54	55	60	77	66
Pennsylvania	81	84	84	90	98	114
Rhode Island	84	79	86	76	95	115
South Carolina	83	97	103	103	110	117
South Dakota	55	46	87	73	79	83
Tennessee	73	77	75	84	100	83
Texas	80	81	84	91	99	94
Utah	46	62	61	57	49	84
Vermont	55	74	58	62	61	69
Virginia	91	99	93	103	123	115
Washington	55	61	62	53	65	67
West Virginia	66	65	67	74	83	103
Wisconsin	62	66	57	74	67	80
Wyoming	29	32	53	57	45	53

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84.

Despite the overall trend toward increasing incidence, because of the smaller geographical areas, there is greater year-to-year fluctuation in incidence rates at the State level than is true nationally. For instance, in 1984, there were 16 States in which the incidence rate was lower than in 1983.

Variations in Medicare ESRD program incidence are illustrated in more depth in Table 5. State incidence rates were averaged across the 6 years 1979 through 1984 to make the estimates more stable. States were ranked from highest to lowest incidence rates. The United States total incidence rate during this interval was 88 per million. This ranged from a high of 222 per million in the District of Columbia to a low of 32 per million in Alaska. The rates were then age-, sex-, and race-adjusted (with the indirect method) to control for demographic differences across States. In general the age, sex, and race adjustment did not greatly alter the ranking of the States. However, it did narrow the range of incidence rates considerably. The District of Columbia, where persons of all other rates other than white comprise 70 percent of the total population, has an adjusted incidence rate (107 per million) which is 52 percent lower than its unadjusted incidence rate (208 per million). Similarly, Utah, with less than 1 percent of the population comprised of persons of all other races other than white, has an adjusted rate (88 per million) which is 47 percent greater than the unadjusted rate. The age, sex, and race adjustment tended to lower rates in high incidence States and raise rates in low incidence States. Of the 19 States with unadjusted rates over the U.S. total rate, 16 had lower adjusted rates. Of the 30 States with unadjusted rates below the U.S. total rate, 26 had higher adjusted rates.

Table 6 presents incidence rates for the years 1979–82 for 10 of the countries that participate in the European Dialysis and Transplant Association (EDTA) and for the United States. With the exception of England, the more affluent Western European countries had incidence rates during these years of between 40 and 60 per million population. The rates in Eastern European countries tend to be much lower. These rates probably represent not only a difference in underlying renal failure but medical constraints among the various countries as well. The rate of increase in treated renal failure in many of these European countries is as high or higher than in the United States. Thus, it would appear that the trend toward expansion of renal treatment in the United States is paralleled in most European countries. Nevertheless, in 1984, treated renal failure among white people in the United States was still higher than any country participating in the EDTA.

Program enrollment

This section describes the trends in Medicare ESRD program enrollment for the years 1979–84. Tables are presented which show Medicare ESRD enrollment by age, sex, race, and primary diagnosis. Enrollment counts are taken as of July 1 of each year and include all living ESRD Medicare beneficiaries: dialysis, transplant, and post-transplant patients.

Table 7 shows Medicare enrollment by age, sex, and race categories for the years 1979–84. During this period, ESRD enrollment increased from 54,428 to 92,770; an average annual increase of 13.5 percent. However, the rate of increase has slowed in recent years. From 1979 to 1980, the increase was 13.7 percent. From 1983 to 1984 the increase was 7.2 percent. Growth in program enrollment reflects the changes in incidence rates. Annual increases have been greatest for persons 65 years of age or over (15.8 percent), females (11.9 percent), and persons of other races (12.8 percent).

In 1984, 6.5 percent of the Medicare ESRD beneficiary population were under 25 years of age, 1 percent were in the age group 25–44, 39.9 percent were in the age group 45–64, and 25.5 percent were in the age group 65 years of age or over. Fifty-five percent were male and 67 percent were white people.

Medicare ESRD enrollment expressed in rates per million is presented in Table 8. Total Medicare ESRD enrollment increased from 242 per million in 1979 to 393 per million in 1984, a 10.2-percent annual increase. Enrollment rates in 1984 were highest for persons 45–64 years of age (827 per million) and 65 years of age or over (845 per million). The enrollment rate for males (448 per million) is 31 percent greater than for females (341 per million). The enrollment rate for persons of races other than white (877 per million) is 2.8 times as great as the rate for white persons (308 per million).

Table 9 presents Medicare ESRD program enrollment rates by primary diagnosis. The greatest increase in enrollment has occurred for persons whose renal failure is attributed to diabetes, with a 23.5-percent annual increase. High rates of increase are also shown for hypertension (19.2 percent), glomerulonephritis (16.5 percent), and congenital anomalies (14.4 percent). These rates should be interpreted with some caution, however, as the overall enrollment still has many persons whose renal failure occurred prior to 1979 and whose cause of renal failure is unknown. Despite the improvement in reporting in recent years, in 1984, the cause of renal failure is unknown or unreported for over one-fourth of the Medicare ESRD beneficiary population.

Table 5

Medicare end stage renal disease program incidence rates per million population: 1979-84 average

Rank	State	Unadjusted rate	Rank	State	Age, sex, and race adjusted rate
1	District of Columbia	222	1	District of Columbia	107
2	Florida	114	2	New Jersey	106
3	New Jersey	112	3	Florida	99
4	Virginia	104	3	Rhode Island	99
5	South Carolina	102	5	Virginia	98
6	Hawaii	101	6	Arizona	97
6	Georgia	101	7	Nevada	96
8	Alabama	98	7	Connecticut	96
9	Arizona	95	9	Pennsylvania	92
10	New York	94	10	Georgia	91
11	Maryland	93	11	Texas	88
11	California	93	11	West Virginia	88
13	Mississippi	92	11	South Carolina	88
13	Pennsylvania	92	11	Delaware	88
15	Louisiana	91	11	Massachusetts	88
16	Connecticut	90	11	Utah	88
17	Rhode Island	89	11	Michigan	88
17	Texas	89	18	Indiana	86
17	Delaware	89	19	Ohio	85
20	Nevada	88	20	New York	84
20	North Carolina	88	20	Alabama	84
22	Illinois	87	20	Illinois	84
23	Michigan	84	23	Maryland	83
24	New Mexico	83	23	Minnesota	83
25	Tennessee	82	23	California	83
26	Ohio	80	23	New Mexico	83
27	Missouri	78	27	Vermont	82
27	Massachusetts	78	28	South Dakota	81
29	Indiana	76	28	New Hampshire	81
29	West Virginia	76	30	Tennessee	80
31	Arkansas	75	30	Wisconsin	80
32	South Dakota	71	32	Missouri	79
33	Oklahoma	69	32	Louisiana	79
34	Wisconsin	68	32	North Carolina	79
35	Kansas	67	35	Iowa	78
35	Minnesota	67	36	Kentucky	77
35	Kentucky	67	37	Nebraska	75
38	Iowa	65	38	Kansas	74
39	Nebraska	64	38	Mississippi	74
40	Vermont	63	40	North Dakota	73
40	New Hampshire	63	41	Montana	72
42	Utah	60	42	Maine	71
42	Montana	60	43	Arkansas	70
42	Washington	60	43	Colorado	70
45	North Dakota	59	43	Oklahoma	70
45	Colorado	59	46	Oregon	69
45	Oregon	59	46	Washington	69
48	Maine	58	48	Idaho	65
49	Idaho	50	49	Wyoming	61
50	Wyoming	45	50	Hawaii	54
51	Alaska	32	51	Alaska	38

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84.

Table 6

New end stage renal disease patients per million population, by selected countries: 1979-82

Country	Number of patients per million: 1979	1980	1981	1982	Annual percent increase	Percent change 1981-82
Czechoslovakia	13	15	17	20	13.3	14.7
West Germany	43	47	51	52	7.2	3.4
France	36	42	44	41	4.5	-6.2
East Germany	18	20	22	26	12.0	18.4
Israel	51	58	52	62	6.7	20.5
Italy	34	38	43	43	7.6	-1.2
Poland	6	6	6	7	3.9	16.1
Spain	32	38	40	42	9.7	5.0
Sweden	39	47	47	53	11.0	12.8
England	22	25	28	31	11.7	12.2
United States[1]	76	82	83	89	5.1	7.5
White	61	67	68	72	5.7	6.4
All other	167	176	169	184	3.3	9.2

[1] Includes only Medicare entitled end stage renal disease (ESRD) patients. Of all ESRD patients in the U.S. 7 to 10 percent are not Medicare eligible.

SOURCE: *European Dialysis and Transplant Association Annual Report: 1983;* Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-82.

Table 7

Medicare end stage renal disease program enrollment, by age, sex, and race: 1979-84

Age, sex, and race	1979	1980	1981	1982	1983	1984	ACRG[1]	1983-84 percent increase
Total	54,428	61,899	70,435	77,886	86,499	92,770	11.3	7.2
Age								
Under 25 years	4,145	4,552	5,023	5,406	5,817	6,025	7.8	3.6
25-44 years	15,325	17,108	19,745	21,694	24,070	26,070	11.2	8.3
45-64 years	23,561	26,351	29,844	32,773	35,330	36,991	9.4	4.7
65 years or over	11,397	13,888	15,823	18,013	21,282	23,684	15.8	11.3
Sex								
Male	30,905	35,014	39,567	43,576	48,108	51,430	10.7	6.9
Female	23,523	26,886	30,868	34,310	38,391	41,340	11.9	7.7
Race								
White	37,536	42,433	48,065	53,044	58,276	61,938	10.5	6.3
All other	16,872	19,466	22,370	24,842	28,223	30,832	12.8	9.2

[1] Average annual percent increase, all calculations are based on unrounded numbers.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84.

Table 8

Medicare end stage renal disease program enrollment per million population, by age, sex, and race: 1979-84

Age, sex, and race	Number of enrollees per million population 1979	1980	1981	1982	1983	1984	ACRG[1]	1983-84 percent increase
Total	242	272	307	336	370	393	10.2	6.3
Age								
Under 25 years	44	49	54	58	63	66	8.3	4.2
25-44 years	250	270	302	321	346	364	7.8	5.3
45-64 years	530	592	670	736	792	827	9.3	4.4
65 years or over	453	540	603	671	775	845	13.3	9.0
Sex								
Male	282	317	355	387	423	448	9.7	5.9
Female	203	230	262	288	319	341	10.9	6.7
Race								
White	194	217	244	268	292	308	9.7	5.5
All other	531	607	680	738	820	877	10.5	6.9

[1] Average annual percent increase, all calculations are based on unrounded numbers.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84; and Census Population Estimates-Series P-25, No. 965.

Table 9

Medicare end stage renal disease program enrollment per million population, by primary diagnosis: 1979-84

Primary diagnosis	Number of enrollees per million population 1979	1980	1981	1982	1983	1984	ACRG[1]	1983-84 percent change
Total	242	272	307	336	370	393	10.2	6.3
Glomerulonephritis	39	43	49	60	73	83	16.5	14.0
Hypertension	29	33	41	51	61	69	19.2	12.7
Diabetes	20	23	31	40	49	57	23.5	15.7
Urinary diseases	13	14	16	17	18	18	7.0	2.7
Congenital anomalies	12	14	16	19	22	24	14.4	12.7
Other	27	30	33	37	40	42	9.1	3.6
Unknown	102	114	121	112	107	100	-0.5	-6.7

[1] Average annual percent increase, all calculations are based on unrounded numbers.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1979-84; and Census Population Estimates-Series P-25, No. 965.

Patient treatment trends

Dialysis patients

The statistics in this section are taken from the End Stage Renal Disease Facility Survey, form HCFA-2744. The facility survey covers all patients receiving services at Medicare-approved dialysis facilities and transplant centers. All figures shown are as of December 31 of the year given. It includes both Medicare and non-Medicare entitled patients and thus is not strictly comparable to the Medicare ESRD population described in the previous section.

Table 10 shows the ESRD dialysis population by type and place of dialysis for the years 1980–85. During these years the total U.S. dialysis population increased from 52,364 to 84,797, or an average annual growth rate of 10.1 percent. However, the rate of growth declined in each of the years to the point where growth in 1985 was only 8.0 percent. By far the most common dialysis modality is in-unit hemodialysis. Patients receiving dialysis in this modality increased from 43,271 in 1980 to 67,599 in 1985. In 1985, in-unit hemodialysis accounted for 79.7 percent of all patients on dialysis, up slightly from 1984 but down from 82.6 percent in 1980. A small number of patients receive in-unit peritoneal dialysis. However, the number of these patients has declined and by 1985 accounted for only .7 percent of all dialysis patients.

The remaining dialysis patients either dialyze at home or are involved in a self-dialysis training program. The fastest growing form of dialysis is continuous ambulatory peritoneal dialysis (CAPD). CAPD grew at about 2,000 patients per year through 1983. In 1984 and 1985 the growth in total numbers of patients dropped to about 1,500 per year. This represents a 14.7-percent growth in 1985, still the largest percent growth of any of the forms of dialysis. In 1985, CAPD patients accounted for 13.5 percent of all dialysis patients.

Since 1980 the home hemodialysis population has declined in every year, from 4,715 in 1980 to 3,983 in 1985. The decline of 3.4 percent of this patient population was consistent with the rate of decline for the entire time period. In 1985, home hemodialysis patients comprised 4.7 percent of the total dialysis population and 23.9 percent of the total home population.

Those patients participating in some form of self-care dialysis are shown in Table 11. The number of patients in self-care dialysis has increased from 8,442 in 1980 to 18,131 in 1985, an annual increase of 16.5 percent. However, 92 percent of the total increase of 9,689 in self-dialysis is attributable to the increase in CAPD patients.

Table 11 also shows the number of persons completing self-dialysis training. Again, CAPD is responsible for most of the increased participation. CAPD training has increased at an annual rate of 23.5 percent, whereas the others have remained relatively stable or, in the case of home hemodialysis, have declined in recent years. The big drop in home peritoneal training in 1984 is probably due in part to the addition of the continuous cycling peritoneal dialysis (CCPD) category in 1984. Previously these patients were probably categorized as home peritoneal or CAPD.

Table 10

End stage renal disease (ESRD) dialysis population, by type and place of dialysis: 1980-85[1]

Type and place of dialysis	1980	1981	1982	1983	1984	1985	Average annual percent increase	Percent change 1984-85
Total	52,364	58,924	65,765	71,987	78,483	84,797	10.1	8.0
In-unit hemodialysis	43,271	48,011	52,559	57,029	62,462	67,559	9.3	8.2
In-unit peritoneal	911	944	885	745	603	588	-8.4	-3.0
Home hemodialysis	4,715	4,481	4,394	4,323	4,125	3,983	-3.3	-3.4
Home peritoneal[2]	612	646	816	790	259	231	-17.7	– 10.8
CAPD[3]	2,334	4,347	6,523	8,532	9,995	11,236	37.0	12.4
CCPD[4]	—	—	—	—	859	953	10.9	10.9
Self training	521	495	588	568	481	569	-1.8	-18.3

[1] Counts are as of December 31 of each year from ESRD Facility Surveys.

[2] This figure decreased significantly in 1984, partially because of CCPD[4] patients being counted in this category in previous years. A CCPD[4] category was added to the ESRD Facility Survey in 1984.

[3] Continuous ambulatory peritoneal dialysis.

[4] Continuous cycling peritoneal dialysis. CCPD rate of growth is calculated from 1984.

NOTE: Self training figures include in-unit hemodialysis, in-unit peritoneal, CAPD, and CCPP patients.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the ESRD Facility Survey, 1980-85.

Table 11

Self-care dialysis population and number completing training, by type and place of dialysis: December 31, 1980-December 31, 1985

Type and place of dialysis	1980	1981	1982	1983	1984	1985	Average annual percent change	Percent change 1984-85
All self care								
population	8,442	10,512	12,804	15,124	16,855	18,130	16.5	7.6
Completed training	5,010	5,797	6,748	7,345	8,112	9,190	12.9	13.3
In-unit self care hemodialysis								
population	770	1,031	1,060	1,476	1,611	1,727	17.5	7.1
Completed training	429	528	465	560	525	640	8.3	21.9
Home hemodialysis								
population	4,715	4,481	4,394	4,323	4,125	3,983	-3.3	-3.4
Completed training	1,717	1,150	1,100	1,140	1,086	1,047	-9.4	-3.6
In-unit peritoneal								
population	11	7	11	3	6	1	—	—
Completed training	16	11	9	3	1	2	—	—
Home peritoneal								
population	612	646	816	790	259	231	-17.7	-13.1
Completed training	555	534	669	581	247	165	-21.5	-33.2
CAPD[1] population	2,334	4,347	6,523	8,532	9,995	11,236	36.9	12.4
Completed training	2,293	3,574	4,505	5,061	5,691	6,584	23.5	15.7
CCPD[2] population	—	—	—	—	859	953	10.9	10.9
Completed training	—	—	—	—	562	752	33.8	33.8

[1] Continuous ambulatory peritoneal dialysis.

[2] Continuous cycling peritoneal dialysis. CCPD rate of growth is calculated from 1984.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1980–85.

Transplant patients

Table 12 shows the trend in numbers of kidney transplants since the ESRD program's inception. The number of transplants rose from 1974 to 1985 by an annual rate of 8.3 percent. In two of these years, 1976 and 1978, the number of transplants declined. However, since 1978, transplants have increased from 3,949 to 7,695, an annual rate of change of 10.0 percent.

Most kidney transplants are covered by Medicare. In 1981, there were 4,421 Medicare covered transplants. This increased in the following 4 years to 7,073. In 1985, Medicare covered 91.9 percent of all kidney transplants, up slighlty from 90.5 percent in 1980.

Table 13 shows kidney transplants by donor type for the years 1980–85. In 1980, cadaveric transplants accounted for 3,422, or 73 percent, of the 4,697 total U.S. transplants. Cadaveric transplants increased by an annual rate of 11.2 percent as compared to 8.0 percent annual increase among living related donor transplants. Consequently, cadaveric transplants accounted for a somewhat higher proportion (75.6 percent) of the total in 1985. In the years 1983 to 1984, the increase in cadaveric transplants was quite high while transplants from living related donors actually decreased (21.6 percent and −5.1 percent, respectively). The first full year after the licensing of cyclosporine was 1984, and it could be that some of the increase in cadaveric transplants was because of the availability of this drug. However, in 1985 the rate of increase in cadaveric and living related donor transplants was relatively comparable.

From 1980 to 1985 the number of persons awaiting transplant increased from 5,072 to 9,791, an average annual increase of 14.1 percent (Table 14). Therefore, it appears that the potential pool of patients who could be transplanted is increasing faster than the availability of organs. This could be compounded by changing criteria for patients deemed as suitable transplant candidates. In 1980, 9.7 percent of all dialysis patients were awaiting transplant. By 1985, this had increased to 11.5 percent, perhaps indicating a broader range of dialysis patients are being added to the waiting lists.

Table 12

Kidney transplants, by Medicare coverage: 1973-85

	Total		Medicare coverage[1]			
			Medicare		Non-Medicare	
Year	Number	Percent change	Number	Percent change	Number	Percent change
1973[2]	1,600	—	—	—	—	—
1974	3,190	—	—	—	—	—
1975	3,730	+ 16.9	—	—	—	—
1976	3,504	− 6.1	—	—	—	—
1977	3,973	+ 13.4	—	—	—	—
1978	3,949	− 0.6	—	—	—	—
1979	4,271	+ 8.2	—	—	—	—
1980	4,697	+ 10.0	—	—	—	—
1981	4,885	+ 4.0	4,421	—	464	—
1982	5,358	+ 9.7	4,917	+ 11.2	441	− 5.0
1983	6,112	+ 14.1	5,616	+ 14.2	496	+ 12.5
1984	6,968	+ 14.0	6,029	+ 7.4	939	+ 89.3
1985	7,695	+ 10.4	7,073	+ 17.3	603	− 35.8
			Average annual percent change			
1973-85	—	+ 8.3	—	+ 12.5	—	+ 6.8

[1] Break out of patients by Medicare entitlement was not captured until the 1981 End Stage Renal Disease Facility Survey.

[2] 1973 data cover the period July 1 through December 31; Medicare end stage renal disease coverage was effective July 1, 1973. The overall rate of growth is therefore calculated from 1974. For Medicare and non-Medicare transplants, the rate of growth is calculated from 1981.

SOURCE: Medicare Health Insurance System counts: 1973-75. Social Security Administration, Bureau of Health Insurance: Data from the End Stage Renal Disease Facility Survey Tables, 1976-77. Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1978-85.

Table 13

Kidney transplants, by donor type: 1980-85

	Total		Donor type			
			Cadaver		Living related	
Year	Number	Percent change	Number	Percent change	Number	Percent change
1980	4,697	—	3,422	—	1,275	—
1981	4,885	+ 4.0	3,427	+ 0.1	1,458	+ 14.4
1982	5,358	+ 9.7	3,681	+ 7.4	1,677	+ 15.0
1983	6,112	+ 14.3	4,328	+ 17.6	1,784	+ 7.0
1984	6,968	+ 13.8	5,264	+ 21.6	1,704	− 5.1
1985	7,695	+ 10.4	5,819	+ 10.5	1,876	+ 10.1
			Average annual percent change			
1973-85	—	+ 10.4	—	+ 11.2	—	+ 8.0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1980-85.

Table 14

Patients awaiting transplant: 1980-85

Year	Number	Percent change	Percent of dialysis population
1980	5,072	—	9.7
1981	5,773	+ 13.8	9.8
1982	6,720	+ 16.4	10.2
1983	7,176	+ 6.2	10.0
1984	8,562	+ 19.9	10.9
1985	9,791	+ 14.4	11.5
	Average annual percent change		
1980-85	—	+ 14.1	—

NOTE: While not all patients on transplant waiting lists are chronic dialysis patients, dialysis patients represent an estimated 87 percent of those awaiting transplant.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1980-85.

End stage renal disease facility survey data

Information presented in this section (Tables 15-34) was collected through the use of Form HCFA-2744, ESRD Facility Survey. All surveyed Medicare-approved providers of renal services are required to complete this form annually, covering the period January 1 through December 31.

The rate of compliance in completing the ESRD Facility Survey was 100 percent. It is important to note, however, that the number of facilities surveyed does not equal the number of Medicare-approved facilities in the country. Some ESRD hospitals were excluded from consideration because they provide only backup dialysis on an acute basis, rather than routine maintenance dialysis. Other facilities were not requested to complete an ESRD Facility Survey because they were so recently certified that there was insufficient time to include them in the survey population.

These tables are arrayed either nationally, by network (Appendix C), or by State. Aggregate dialysis patient population figures (end-of-survey period) are as of December 31. Other tables reflect activity for the entire survey period, unless otherwise noted. Some tables display patients by Medicare status: Currently enrolled in Medicare, Medicare application pending, and non-Medicare. Patients appearing in the non-Medicare category may include those who are covered by the Veterans' Administration, those who are covered by private insurance (including those who have employer group health insurance coverage for the first year of ESRD, with Medicare becoming the primary insurer after the first year), those who are covered by Medicaid, and foreign nationals.

The data reported via the ESRD Facility Survey delineate totals for all patients with ESRD; that is, the data are not differentiated within the various treatment modalities between patients who have attained entitlement to Medicare benefits and those who have not.

Although we have no data to definitely indicate what portion of the patients in any particular treatment modality were recipients of Medicare benefits, we know through the ESRD Facility Survey that at the end of 1985, 87.47 percent of all patients were entitled to Medicare benefits; 5.86 percent had applications for Medicare entitlement pending; and 6.67 percent were not eligible for Medicare.

Table 15

End stage renal disease (ESRD) facilities surveyed and reporting, by network: 1985

ESRD network	Dialysis facility		Transplant center	
	Surveyed	Reported	Surveyed	Reported
Total	1,400	1,400	175	175
01	11	11	1	1
02	34	34	6	6
03	72	72	2	2
04	110	110	11	11
05	26	26	5	5
06	35	35	3	3
07	29	29	3	3
08	21	21	4	4
09	42	42	10	10
10	40	40	6	6
11	81	81	11	11
12	46	46	6	6
13	22	22	2	2
14	34	34	10	10
15	62	62	8	8
16	14	14	2	2
17	25	25	6	6
18	89	89	7	7
19	90	90	4	4
20	70	70	5	5
21	23	23	5	5
22	54	54	8	8
23	29	29	5	5
24	62	62	7	7
25	78	78	7	7
26	26	26	6	6
27	17	17	2	2
28	41	41	10	10
29	17	17	3	3
30	52	52	4	4
31	21	21	3	3
32	27	27	3	3

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the ESRD Facility Survey, 1985.

Table 16

End stage renal disease (ESRD) facilities surveyed and reporting, by State: 1985

State	Dialysis facility		Transplant center	
	Surveyed	Reporting	Surveyed	Reporting
Total	1,400	1,400	175	175
Alabama	29	29	2	2
Alaska	2	2	0	0
Arizona	23	23	2	2
Arkansas	18	18	2	2
California	178	178	13	13
Colorado	12	12	2	2
Connecticut	17	17	2	2
Delaware	3	3	0	0
District of Columbia	16	16	5	5
Florida	90	90	4	4
Georgia	47	47	4	4
Hawaii	8	8	1	1
Idaho	5	5	0	0
Illinois	64	64	8	8
Indiana	14	14	2	2
Iowa	12	12	2	2
Kansas	7	7	2	2
Kentucky	16	16	2	2
Louisiana	46	46	6	6
Maine	5	5	1	1
Maryland	28	28	3	3
Massachusetts	26	26	8	8
Michigan	37	37	10	10
Minnesota	16	16	3	3
Mississippi	22	22	1	1
Missouri	35	35	8	8
Montana	4	4	0	0
Nebraska	9	9	2	2
Nevada	4	4	0	0
New Hampshire	4	4	0	0
New Jersey	27	27	3	3
New Mexico	12	12	1	1
New York	103	103	13	13
North Carolina	23	23	5	5
North Dakota	4	4	0	0
Ohio	43	43	11	11
Oklahoma	23	23	4	4
Oregon	9	9	1	1
Pennsylvania	80	80	8	8
Puerto Rico	15	15	2	2
Rhode Island	5	5	0	0
South Carolina	22	22	1	1
South Dakota	6	6	0	0
Tennessee	37	37	4	4
Texas	81	81	11	11
Utah	12	12	3	3
Vermont	1	1	1	1
Virgin Islands	2	2	1	1
Virginia	46	46	4	4
Washington	14	14	5	5
West Virginia	12	12	0	0
Wisconsin	22	22	2	2
Wyoming	1	1	0	0
American Samoa	1	1	0	0
Guam	1	1	0	0
Mariana Islands	1	1	0	0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the ESRD Facility Survey, 1985.

Table 17

Dialysis patient eligibility status, by network: 1985

End stage renal disease network	Facilities reporting	Total dialysis patients	Currently enrolled in Medicare	Medicare application pending	Non-Medicare
Total	1,400	84,797	74,169	4,965	5,663
01	11	540	443	42	55
02	34	2,231	1,971	138	122
03	72	3,582	3,103	189	290
04	110	6,247	5,401	327	519
05	26	1,206	1,074	70	62
06	35	1,571	1,091	273	207
07	29	1,310	1,147	112	51
08	21	1,045	947	29	69
09	42	2.323	2,068	190	65
10	40	1,341	1,172	56	113
11	81	5,794	5,196	226	372
12	46	1,865	1,628	61	176
13	22	971	878	69	24
14	34	2,788	2,371	215	202
15	62	3,740	3,164	275	301
16	14	1,695	1,587	90	18
17	25	1,750	1,395	177	178
18	89	4,805	4,375	188	242
19	90	4,428	3,984	210	234
20	70	4,208	3,792	164	252
21	23	2,384	2,000	316	68
22	54	3,486	3,045	195	246
23	29	1,594	1,262	66	266
24	62	3,644	3,258	173	213
25	78	6,248	5,282	394	572
26	26	1,567	1,413	116	38
27	17	1,098	991	64	43
28	41	2,871	2,585	151	135
29	17	1,140	980	65	95
30	52	2,706	2,393	114	199
31	21	1,256	1,137	58	61
32	27	3,363	3,036	152	175

NOTE: The network map and designated areas are found in Appendixes C and D.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 18
Dialysis patient eligibility status, by State: 1985

State	Facilities reporting	Total dialysis patients	Currently enrolled in Medicare	Medicare application pending	Non-Medicare
Total	1,400	84,797	74,169	4,965	5,663
Alabama	29	1,713	1,562	59	92
Alaska	2	39	32	4	3
Arizona	23	1,096	730	216	150
Arkansas	18	717	596	32	89
California	178	9,522	8,226	500	796
Colorado	12	803	709	49	45
Connecticut	17	1,098	991	64	43
Delaware	3	254	228	12	14
District of Columbia	16	863	659	26	178
Florida	90	4,428	3,984	210	234
Georgia	47	2,624	2,352	114	158
Hawaii	8	479	415	35	29
Idaho	5	148	136	2	10
Illinois	64	3,856	3,267	282	307
Indiana	14	1,695	1,587	90	18
Iowa	12	649	563	20	66
Kansas	7	546	492	47	7
Kentucky	16	966	743	101	122
Louisiana	46	1,865	1,628	61	176
Maine	5	235	211	14	10
Maryland	28	1,695	1,504	81	110
Massachusetts	26	1,933	1,714	109	110
Michigan	37	2,826	2,398	216	212
Minnesota	16	998	877	96	25
Mississippi	22	1,176	1,079	39	58
Missouri	35	1,746	1,553	141	52
Montana	4	200	176	13	11
Nebraska	9	363	355	4	4
Nevada	4	307	278	16	13
New Hampshire	4	204	194	6	4
New Jersey	27	3,363	3,036	152	175
New Mexico	12	475	361	57	57
New York	103	7,772	6,654	510	608
North Carolina	23	2,384	2,000	316	68
North Dakota	4	127	110	8	9
Ohio	43	3,037	2,619	203	215
Oklahoma	23	680	619	28	33
Oregon	9	605	563	29	13
Pennsylvania	80	4,666	4,149	229	288
Puerto Rico	15	1,124	966	65	93
Rhode Island	5	421	395	15	11
South Carolina	22	1,575	1,433	50	92
South Dakota	6	147	133	7	7
Tennessee	37	1,831	1,660	86	85
Texas	81	5,794	5,196	226	372
Utah	12	371	337	20	14
Vermont	1	78	71	7	0
Virgin Islands	2	16	14	0	2
Virginia	46	2,463	2,161	105	197
Washington	14	1,239	1,064	90	85
West Virginia	12	535	468	26	41
Wisconsin	22	971	878	69	24
Wyoming	1	18	15	1	2
American Samoa	1	12	11	0	1
Guam	1	34	17	7	10
Mariana Islands	1	15	0	0	15

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 19

Dialysis patient counts, by type and place of dialysis: United States, 1985

Item	Total	Percent	In-unit	Percent	Home	Percent
Dialysis patients beginning survey	78,548	—	63,312	80.60	15,236	19.40
Additions	48,177	—	41,406	85.95	6,771	14.05
New starts	29,995	62.26	25,331	61.18	4,664	68.88
Restarted	565	1.17	497	1.20	68	1.00
Transferred in	15,663	32.51	13,930	33.64	1,733	25.59
Returned after transplant	1,954	4.06	1,648	3.98	306	4.52
Losses	41,928	—	35,518	84.71	6,410	15.29
Deaths	18,093	43.15	15,208	42.82	2,885	45.01
Recovered function	1,047	2.50	924	2.60	123	1.92
Transplanted	6,758	16.12	5,254	14.79	1,504	23.46
Transferred out	15,024	35.83	13,272	37.37	1,752	27.33
Discontinued dialysis	792	1.89	689	1.94	103	1.61
Lost to followup	214	0.51	171	0.48	43	0.67
Number needed to balance[1]	0	—	-806	—	806	—
Dialysis patients end of survey	84,797	—	68,394	80.66	16,403	19.34
Hemodialysis	71,542	84.37	67,559	98.78	3,983	24.28
Peritoneal dialysis	819	0.97	588	0.86	231	1.41
CAPD[2]	11,462	13.52	226	0.33	11,236	68.50
CCPD[3]	974	1.15	21	0.03	953	5.81
Medicare status	84,797	—	—	—	—	—
Medicare	74,169	87.47	—	—	—	—
Medicare pending	4,965	5.86	—	—	—	—
Non-Medicare	5,663	6.68	—	—	—	—

[1] Accurate counts are not always available because of the movement of home patients among home dialysis, self-care training, and in-unit backup dialysis.

[2] Continuous ambulatory peritoneal dialysis.

[3] Continuous cycling peritoneal dialysis.

NOTE: Percents may not add to total because of rounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 20

Patients receiving care in-unit, by network: December 31, 1985

End stage renal disease network	Facilities reporting	Total in-unit patients	Staff assisted dialysis		In-unit self-dialysis		Self-dialysis training			
			Hemo	Peri	Hemo	Peri	Hemo	Peri	CAPD[1]	CCPD[2]
Total	1,400	68,394	65,515	583	1,726	1	318	4	226	21
01	11	460	310	0	117	0	33	0	0	0
02	34	1,307	1,262	6	9	0	24	0	5	1
03	72	3,031	2,728	0	262	0	35	0	5	1
04	110	5,663	5,593	3	50	0	15	0	2	0
05	26	822	806	3	9	0	3	0	1	0
06	35	1,177	1,115	0	49	0	6	0	7	0
07	29	1,042	1,039	3	0	0	0	0	0	0
08	21	672	665	3	0	0	4	0	0	0
09	42	1,652	1,569	3	63	0	11	0	6	0
10	40	940	899	24	2	0	9	0	3	3
11	81	4,919	4,698	34	155	0	19	1	11	1
12	46	1,711	1,679	5	25	0	1	0	1	0
13	22	661	605	20	32	0	1	0	3	0
14	34	1,987	1,883	33	48	0	13	1	9	0
15	62	3,304	2,995	51	238	0	17	0	3	0
16	14	964	903	0	0	0	7	0	53	1
17	25	1,311	1,275	21	6	0	2	0	7	0
18	89	3,619	3,585	3	11	0	12	0	8	0
19	90	3,873	3,847	4	18	0	1	0	2	1
20	70	3,545	3,466	15	54	0	7	0	3	0
21	23	1,743	1,733	0	1	0	4	1	3	1
22	54	2,793	2,737	33	16	0	2	0	4	1
23	29	1,398	1,378	3	15	0	0	0	2	0
24	62	3,033	2,895	16	93	0	12	1	16	0
25	78	5,426	5,232	98	63	0	16	0	16	1
26	26	1,135	1,027	17	74	0	12	0	5	0
27	17	857	821	12	23	0	0	0	1	0
28	41	2,358	2,287	16	43	0	5	0	5	2
29	17	1,056	1,006	17	3	0	4	0	24	2
30	52	2,188	2,119	9	38	0	11	0	9	2
31	21	1,024	935	7	76	0	4	0	2	0
32	27	2,723	2,423	124	133	1	28	0	10	4

[1] Continuous ambulatory peritoneal dialysis.
[2] Continuous cycling peritoneal dialysis.

NOTE: Hemo: hemodialysis; Peri: peritoneal.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 21

Patients receiving care in-unit, by State: December 31, 1985

State	Facilities reporting	Total in-unit patients	Staff assisted dialysis		In-unit self-dialysis		Self-dialysis training			
			Hemo	Peri	Hemo	Peri	Hemo	Peri	CAPD[1]	CCPD[2]
Total	1,400	68,394	65,515	583	1,726	1	318	4	226	21
Alabama	29	1,360	1,347	1	7	0	0	0	5	0
Alaska	2	37	37	0	0	0	0	0	0	0
Arizona	23	810	749	0	49	0	6	0	6	0
Arkansas	18	504	476	20	0	0	5	0	2	1
California	178	8,451	8,083	3	312	0	46	0	6	1
Colorado	12	540	536	2	0	0	2	0	0	0
Connecticut	17	857	821	12	23	0	0	0	1	0
Delaware	3	216	199	0	15	0	0	0	1	0
District of Columbia	16	756	752	3	0	0	0	0	1	0
Florida	90	3,873	3,847	4	18	0	1	0	2	0
Georgia	47	2,135	2,069	15	45	0	3	0	3	0
Hawaii	8	399	257	0	110	0	32	0	0	0
Idaho	5	109	106	0	0	0	3	0	0	0
Illinois	64	3,413	3,104	51	238	0	17	0	3	0
Indiana	14	964	903	0	0	0	7	0	53	1
Iowa	12	415	411	0	0	0	4	0	0	0
Kansas	7	341	337	1	1	0	0	0	2	0
Kentucky	16	717	704	10	0	0	1	0	2	0
Louisiana	46	1,711	1,679	5	25	0	1	0	1	0
Maine	5	195	192	1	2	0	0	0	0	0
Maryland	28	1,417	1,312	7	91	0	4	0	3	0
Massachusetts	26	1,570	1,516	15	29	0	3	0	5	2
Michigan	37	2,020	1,916	33	48	0	13	1	9	0
Minnesota	16	754	757	3	0	0	0	0	0	0
Mississippi	22	873	862	0	4	0	7	0	0	0
Missouri	35	1,282	1,203	2	62	0	11	0	4	0
Montana	4	100	92	4	2	0	1	0	1	0
Nebraska	9	229	226	3	0	0	0	0	0	0
Nevada	4	243	238	0	0	0	4	0	1	0
New Hampshire	4	164	157	0	5	0	2	0	0	0
New Jersey	27	2,723	2,423	124	133	1	28	0	10	4
New Mexico	12	367	366	0	0	0	0	0	1	0
New York	103	6,534	6,234	113	137	0	28	0	21	1
North Carolina	23	1,743	1,733	0	1	0	4	1	3	1
North Dakota	4	117	117	0	0	0	0	0	0	0
Ohio	43	2,418	2,369	22	14	0	3	0	9	1
Oklahoma	23	481	467	5	2	0	4	0	1	2
Oregon	9	361	353	1	0	0	3	0	3	1
Pennsylvania	80	3,813	3,660	40	86	0	12	1	14	0
Puerto Rico	15	1,040	990	17	3	0	4	0	24	2
Rhode Island	5	385	385	0	0	0	0	0	0	0
South Carolina	22	1,400	1,387	0	9	0	4	0	0	0
South Dakota	6	138	138	0	0	0	0	0	0	0
Tennessee	37	1,313	1,304	1	0	0	5	0	3	0
Texas	81	4,919	4,698	34	155	0	19	1	11	1
Utah	12	252	240	1	9	0	1	0	1	0
Vermont	1	44	37	0	7	0	0	0	0	0
Virgin Islands	2	16	16	0	0	0	0	0	0	0
Virginia	46	2,059	1,997	6	38	0	9	0	7	2
Washington	14	700	674	1	7	0	17	0	1	0
West Virginia	12	378	371	3	0	0	2	0	2	0
Wisconsin	22	661	605	20	32	0	1	0	3	0
Wyoming	1	16	16	0	0	0	0	0	0	0
American Samoa	1	12	12	0	0	0	0	0	0	0
Guam	1	34	26	0	7	0	1	0	0	0
Mariana Islands	1	15	15	0	0	0	0	0	0	0

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[1] Continuous ambulatory peritoneal dialysis.

[2] Continuous cycling peritoneal dialysis.

NOTE: Hemo: hemodialysis; Peri: peritoneal.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 22

Patients receiving care at home, by network: December 31, 1985

End stage renal disease network	Facilities reporting	Total home patients	Hemo-dialysis	Peritoneal dialysis	CAPD[1]	CCPD[2]
Total	1,400	16,403	3,983	231	11,236	953
01	11	80	35	0	32	13
02	34	924	566	19	309	30
03	72	551	114	1	399	37
04	110	584	82	1	427	74
05	26	384	150	18	204	12
06	35	394	42	1	343	8
07	29	268	115	7	135	11
08	21	373	66	1	266	40
09	42	671	180	0	468	23
10	40	401	77	3	291	30
11	81	875	185	23	586	81
12	46	154	22	0	118	14
13	22	310	47	2	250	11
14	34	801	92	21	680	8
15	62	436	68	0	332	36
16	14	731	167	0	561	3
17	25	439	54	1	377	7
18	89	1,186	377	73	701	35
19	90	555	98	1	396	60
20	70	663	120	0	472	71
21	23	641	141	11	406	83
22	54	693	93	14	529	57
23	29	196	43	1	128	24
24	62	611	92	12	474	33
25	78	822	323	1	490	8
26	26	432	77	0	335	20
27	17	241	25	0	216	0
28	41	513	143	0	331	39
29	17	84	52	0	29	3
30	52	518	112	6	370	30
31	21	232	44	6	159	23
32	27	640	181	8	422	29

[1] Continuous ambulatory peritoneal dialysis.

[2] Continuous cycling peritoneal dialysis.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 23

Patients receiving care at home, by State: December 31, 1985

State	Facilities reporting	Total home patients	Hemo-dialysis	Peritoneal dialysis	CAPD[1]	CCPD[2]
Total	1,400	16,403	3,983	231	11,236	953
Alabama	29	353	81	13	242	17
Alaska	2	2	2	0	0	0
Arizona	23	286	33	0	247	6
Arkansas	18	213	40	3	154	16
California	178	1,071	177	2	781	111
Colorado	12	263	81	17	160	5
Connecticut	17	241	25	0	216	0
Delaware	3	38	6	0	32	0
District of Columbia	16	107	3	1	96	7
Florida	90	555	98	1	396	60
Georgia	47	489	75	0	377	37
Hawaii	8	80	35	0	32	13
Idaho	5	39	22	0	16	1
Illinois	64	443	70	0	337	36
Indiana	14	731	167	0	561	3
Iowa	12	234	60	1	150	23
Kansas	7	205	69	0	135	1
Kentucky	16	249	39	1	205	4
Louisiana	46	154	22	0	118	14
Maine	5	40	13	0	20	7
Maryland	28	278	52	6	181	39
Massachusetts	26	363	106	0	235	22
Michigan	37	806	93	21	683	9
Minnesota	16	244	112	7	115	10
Mississippi	22	303	145	1	155	2
Missouri	35	464	109	0	333	22
Montana	4	100	45	0	49	6
Nebraska	9	134	6	0	111	17
Nevada	4	64	19	0	45	0
New Hampshire	4	40	6	0	27	7
New Jersey	27	640	181	8	422	29
New Mexico	12	108	9	1	96	2
New York	103	1,238	399	1	810	28
North Carolina	23	641	141	11	406	83
North Dakota	4	10	2	0	8	0
Ohio	43	619	57	8	510	44
Oklahoma	23	199	37	0	148	14
Oregon	9	244	45	0	187	12
Pennsylvania	80	853	138	18	648	49
Puerto Rico	15	84	52	0	29	3
Rhode Island	5	36	5	0	28	3
South Carolina	22	175	45	0	96	34
South Dakota	6	9	0	0	9	0
Tennessee	37	518	151	59	292	16
Texas	81	875	185	23	586	81
Utah	12	119	69	1	42	7
Vermont	1	34	13	0	21	0
Virgin Islands	2	0	0	0	0	0
Virginia	46	404	114	3	262	25
Washington	14	539	452	19	57	11
West Virginia	12	157	30	3	118	6
Wisconsin	22	310	47	2	250	11
Wyoming	1	2	0	0	2	0
American Samoa	1	0	0	0	0	0
Guam	1	0	0	0	0	0
Mariana Islands	1	0	0	0	0	0

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[1] Continuous ambulatory peritoneal dialysis.

[2] Continuous cycling peritoneal dialysis.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 24

Dialysis treatment setting of end stage renal disease (ESRD) patients, by network: 1985

ESRD network	Facilities reporting	Total dialysis patients	Dialyzed in-unit		Dialyzed at home	
			Total	Percent	Total	Percent
Total	1,400	84,797	68,394	80.7	16,403	19.3
01	11	540	460	85.2	80	14.8
02	34	2,231	1,307	58.6	924	41.4
03	72	3,582	3,031	84.6	551	15.4
04	110	6,247	5,663	90.7	584	9.3
05	26	1,206	822	68.2	384	31.8
06	35	1,571	1,177	74.9	394	25.1
07	29	1,310	1,042	79.5	268	20.5
08	21	1,045	672	64.3	373	35.7
09	42	2,323	1,652	71.1	671	28.9
10	40	1,341	940	70.1	401	29.9
11	81	5,794	4,919	84.9	875	15.1
12	46	1,865	1,711	91.7	154	8.3
13	22	971	661	68.1	310	31.9
14	34	2,788	1,987	71.3	801	28.7
15	62	3,740	3,304	88.3	436	11.7
16	14	1,695	964	56.9	731	43.1
17	25	1,750	1,311	74.9	439	25.1
18	89	4,805	3,619	75.3	1,186	24.7
19	90	4,428	3,873	87.5	555	12.5
20	70	4,208	3,545	84.2	663	15.8
21	23	2,384	1,743	73.1	641	26.9
22	54	3,486	2,793	80.1	693	19.9
23	29	1,594	1,398	87.7	196	12.3
24	62	3,644	3,033	83.2	611	16.8
25	78	6,248	5,426	86.8	822	13.2
26	26	1,567	1,135	72.4	432	27.6
27	17	1,098	857	78.1	241	21.9
28	41	2,871	2,358	82.1	513	17.9
29	17	1,140	1,056	92.6	84	7.4
30	52	2,706	2,188	80.9	518	19.1
31	21	1,256	1,024	81.5	232	18.5
32	27	3,363	2,723	81.0	640	19.0

NOTE: Percents may not add to total because of rounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the ESRD Facility Survey, 1985.

Table 25

Patients completing a self-dialysis training course during the calendar year, by network: 1985

End stage renal disease network	Facilities reporting	Total patients	Home hemo-dialysis	In-unit self-hemo-dialysis	Home Peritoneal dialysis	In-unit self peritoneal dialysis	CAPD[1]	CCPD[2]
Total	766	9,190	1,047	640	165	2	6,584	752
01	3	65	7	30	0	0	18	10
02	20	432	231	6	13	0	169	13
03	44	346	32	85	1	0	207	21
04	54	335	36	9	2	0	240	48
05	18	132	29	0	0	1	97	5
06	19	225	6	3	1	0	209	6
07	11	201	71	0	0	0	115	15
08	12	175	22	0	0	0	134	19
09	27	422	49	27	6	0	315	25
10	19	236	25	4	3	0	176	28
11	44	488	33	78	12	0	309	56
12	13	99	5	12	8	0	66	8
13	17	168	7	6	4	0	144	7
14	24	469	28	21	13	1	396	10
15	29	374	15	105	1	0	216	37
16	11	342	39	0	0	0	300	3
17	16	256	16	0	0	0	235	5
18	41	582	94	4	52	0	406	26
19	40	325	9	4	0	0	234	78
20	38	365	15	41	1	0	262	46
21	14	383	38	1	6	0	285	53
22	34	457	28	6	15	0	360	48
23	14	100	11	14	1	0	56	18
24	36	383	12	36	9	0	297	29
25	35	335	57	23	0	0	247	8
26	19	256	21	32	0	0	187	16
27	15	129	6	4	0	0	117	2
28	29	247	16	16	3	0	180	32
29	6	53	15	0	0	0	35	3
30	29	259	32	9	1	0	192	25
31	14	144	5	19	3	0	94	23
32	21	407	37	45	10	0	286	29

[1] Continuous ambulatory peritoneal dialysis.

[2] Continuous cycling peritoneal dialysis.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 26
In-unit dialysis treatments given during the calendar year, by network: 1985

End stage renal disease network	Facilities reporting	Total treatments[1]	Hemodialysis		Peritoneal dialysis	
			Staff assisted	In-unit self	Staff assisted	In-unit self
Total	1,400	9,268,953	8,940,402	250,802	77,502	247
01	11	57,527	41,003	16,524	0	0
02	34	181,029	178,157	1,407	1,465	0
03	72	413,071	373,921	39,146	4	0
04	110	773,924	764,425	8,046	1,453	0
05	26	117,211	114,216	1,877	970	148
06	35	156,592	148,052	8,520	20	0
07	29	153,651	153,365	0	286	0
08	21	85,332	84,661	0	671	0
09	42	224,422	215,433	7,823	1,166	0
10	40	129,804	126,821	190	2,793	0
11	81	684,456	654,220	23,458	6,774	3
12	46	235,267	232,005	2,014	1,248	0
13	22	86,567	79,383	5,307	1,877	0
14	34	263,147	250,852	7,347	4,930	18
15	62	436,196	400,075	32,538	5,583	0
16	14	121,712	120,215	0	1,497	0
17	25	167,040	163,606	1,097	2,336	1
18	89	484,023	482,550	1,463	10	0
19	90	555,745	552,371	2,703	671	0
20	70	466,623	454,577	8,413	3,633	0
21	23	236,606	236,268	129	209	0
22	54	364,633	358,793	2,499	3,341	0
23	29	192,707	185,484	2,023	5,200	0
24	62	420,687	402,300	15,189	3,198	0
25	78	709,351	693,979	8,804	6,568	0
26	26	140,038	127,620	11,555	863	0
27	17	118,270	112,993	3,464	1,743	70
28	41	327,576	318,068	6,396	3,112	0
29	17	181,736	180,067	200	1,469	0
30	52	298,224	291,278	5,054	1,892	0
31	21	130,656	121,379	8,026	1,251	0
32	27	353,131	322,265	19,590	11,269	7

[1] Does not include training treatments.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 27

Dialysis training treatments given during the calendar year, by network: 1985

End stage renal disease network	Facilities reporting	Total training treatments	Hemo-dialysis	Peritoneal dialysis	CAPD[1]	CCPD[2]
Total	1,400	130,942	54,823	2,874	65,844	7,401
01	11	1,194	647	0	244	103
02	34	9,105	7,312	105	1,597	91
03	72	8,086	4,416	23	3,565	84
04	110	6,376	3,400	20	2,574	382
05	26	1,693	636	30	964	63
06	35	2,212	624	2	1,546	40
07	29	1,977	909	0	920	148
08	21	3,373	636	665	1,828	244
09	42	4,937	2,069	117	2,616	135
10	40	2,770	1,016	19	1,540	195
11	81	7,644	4,073	232	2,819	520
12	46	1,758	239	144	1,169	206
13	22	1,914	514	28	1,326	46
14	34	6,923	2,036	200	4,622	65
15	62	3,852	1,663	58	1,841	290
16	14	3,734	1,134	0	2,585	15
17	25	2,399	444	0	1,867	88
18	89	6,510	2,863	388	3,014	245
19	90	2,797	303	8	1,954	532
20	70	3,889	1,123	18	2,347	401
21	23	3,486	829	104	2,195	358
22	54	4,802	1,089	218	3,091	404
23	29	1,215	493	20	523	179
24	62	4,656	1,239	329	2,937	151
25	78	6,440	2,893	0	3,458	89
26	26	4,697	2,463	0	2,078	156
27	17	2,241	275	0	1,956	10
28	41	3,164	930	30	1,934	270
29	17	1,143	777	0	336	30
30	52	3,000	1,242	4	1,452	302
31	21	1,949	732	16	1,004	197
32	27	11,004	5,604	96	3,942	1,362

[1] Continuous ambulatory peritoneal dialysis.
[2] Continuous cycling peritoneal dialysis.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 28

Kidney transplant activity during the calendar year: United States, 1985

Category	Number
Transplants performed at center	7,695
Living donor	1,876
Cadaveric donor	5,819
Patients awaiting transplant	9,791
Dialysis	9,354
Non-dialysis	437
Patients who received transplant at center	7,676
Medicare status	7,676
Medicare	6,698
Medicare pending	375
Non-Medicare	603

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 29

Source and disposition of cadaveric kidneys: United States, 1985

Source	Total	Transplanted at center	Sent to another center	Not used
Total	8,574	5,836	2,273	465
Harvested at center	2,064	988	962	114
Obtained from other center/organ procurement agency	2,871	2,522	271	78
Obtained from non-transplant hospital	3,639	2,326	1,040	273

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 30

Kidney transplant center patient eligibility status, by network: 1985

End stage renal disease network	Centers reporting	Total transplant patients	Currently enrolled in Medicare	Medicare application pending	Non-Medicare
Total	175	7,676	6,698	375	603
01	1	16	15	0	1
02	6	230	215	10	5
03	2	375	342	9	24
04	11	535	437	43	55
05	5	207	191	13	3
06	3	157	126	2	29
07	3	316	274	30	12
08	4	112	91	15	6
09	10	274	257	14	3
10	6	104	94	6	4
11	11	619	570	11	38
12	6	129	111	3	15
13	2	263	163	6	94
14	10	317	300	5	12
15	8	330	310	10	10
16	2	102	100	0	2
17	6	228	209	4	15
18	7	364	335	6	23
19	4	286	274	6	6
20	5	172	161	8	3
21	5	151	147	1	3
22	8	536	492	24	20
23	5	213	132	15	66
24	7	323	273	19	31
25	7	376	295	21	60
26	6	162	154	7	1
27	2	93	87	2	4
28	10	314	196	77	41
29	3	46	44	0	2
30	4	111	104	4	3
31	3	99	86	2	11
32	3	116	113	2	1

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 31

Kidney transplant center patient eligibility status, by State: 1985

State	Centers reporting	Total transplant patients	Currently enrolled in Medicare	Medicare application pending	Non-Medicare
Total	175	7,676	6,698	375	603
Alabama	2	180	175	3	2
Arizona	2	110	82	2	26
Arkansas	2	27	26	0	1
California	13	910	779	52	79
Colorado	2	78	75	2	1
Connecticut	2	93	87	2	4
District of Columbia	5	213	132	15	66
Florida	4	286	274	6	6
Georgia	4	107	97	7	3
Hawaii	1	16	15	0	1
Illinois	8	330	310	10	10
Indiana	2	102	100	0	2
Iowa	2	78	72	0	6
Kansas	2	71	69	1	1
Kentucky	2	88	83	2	3
Louisiana	6	129	111	3	15
Maine	1	40	37	1	2
Maryland	3	99	86	2	11
Massachusetts	8	252	138	75	39
Michigan	10	317	300	5	12
Minnesota	3	316	274	30	12
Mississippi	1	29	27	1	1
Missouri	8	203	188	13	2
Nebraska	2	34	19	15	0
New Jersey	3	116	113	2	1
New Mexico	1	47	44	0	3
New York	13	538	449	28	61
North Carolina	5	151	147	1	3
Ohio	11	496	448	20	28
Oklahoma	4	77	68	6	3
Oregon	1	107	104	1	2
Pennsylvania	8	503	443	25	35
Puerto Rico	2	44	43	0	1
South Carolina	1	65	64	1	0
Tennessee	4	155	133	2	20
Texas	11	619	570	11	38
Utah	3	129	116	11	2
Vermont	1	22	21	1	0
Virgin Islands	1	2	1	0	1
Virginia	4	111	104	4	3
Washington	5	123	111	9	3
Wisconsin	2	263	163	6	94

NOTE: The following States have no Medicare-approved kidney transplant centers: Alaska, Delaware, Idaho, Montana, Nevada, New Hampshire, North Dakota, Rhode Island, South Dakota, West Virginia, Wyoming, American Samoa, Guam and Mariana Islands.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 32

Distribution of kidney transplants, by source of donor kidney and network: 1985

End stage renal disease network	Centers reporting	People	Transplants	Living related		Cadaveric	
				Number	Percent	Number	Percent
Total	175	7,676	7,695	1,876	24.4	5,819	75.6
01	1	16	16	5	31.3	11	68.8
02	6	230	231	75	32.5	156	67.5
03	2	375	375	87	23.2	288	76.8
04	11	535	540	75	13.9	465	86.1
05	5	207	207	50	24.2	157	75.8
06	3	157	157	52	33.1	105	66.9
07	3	316	319	125	39.2	194	60.8
08	4	112	113	18	15.9	95	84.1
09	10	274	274	78	28.5	196	71.5
10	6	104	105	48	45.7	57	54.3
11	11	619	620	140	22.6	480	77.4
12	6	129	131	35	26.7	96	73.3
13	2	263	263	94	35.7	169	64.3
14	10	317	317	51	16.1	266	83.9
15	8	330	330	78	23.6	252	76.4
16	2	102	102	32	31.4	70	68.6
17	6	228	228	56	24.6	172	75.4
18	7	364	364	110	30.2	254	69.8
19	4	286	288	71	24.7	217	75.3
20	5	172	173	57	32.9	116	67.1
21	5	151	151	39	25.8	112	74.2
22	8	536	536	85	15.9	451	84.1
23	5	213	213	32	15.0	181	85.0
24	7	323	323	85	26.3	238	73.7
25	7	376	376	89	23.7	287	76.3
26	6	162	162	31	19.1	131	80.9
27	2	93	95	16	16.8	79	83.2
28	10	314	314	85	27.1	229	72.9
29	3	46	46	23	50.0	23	50.0
30	4	111	111	25	22.5	86	77.5
31	3	99	99	19	19.2	80	80.8
32	3	116	116	10	8.6	106	91.4

NOTE: Percents may not add to 100 because of rounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 33

Kidney transplants performed, by State: 1985

State	Centers reporting	Total patients	Total transplants	Living donor	Cadaveric donor
Total	175	7,676	7,695	1,876	5,819
Alabama	2	180	180	55	125
Arizona	2	110	110	39	71
Arkansas	2	27	27	19	8
California	13	910	915	162	753
Colorado	2	78	78	4	74
Connecticut	2	93	95	16	79
District of Columbia	5	213	213	32	181
Florida	4	286	288	71	217
Georgia	4	107	108	43	65
Hawaii	1	16	16	5	11
Illinois	8	330	330	78	252
Indiana	2	102	102	32	70
Iowa	2	78	78	14	64
Kansas	2	71	71	19	52
Kentucky	2	88	88	17	71
Louisiana	6	129	131	35	96
Maine	1	40	40	12	28
Maryland	3	99	99	19	80
Massachusetts	8	252	252	68	184
Michigan	10	317	317	51	266
Minnesota	3	316	319	125	194
Mississippi	1	29	29	1	28
Missouri	8	203	203	59	144
Nebraska	2	34	35	4	31
New Jersey	3	116	116	10	106
New Mexico	1	47	47	13	34
New York	13	538	538	120	418
North Carolina	5	151	151	39	112
Ohio	11	496	496	124	372
Oklahoma	4	77	78	29	49
Oregon	1	107	108	21	87
Pennsylvania	8	503	503	85	418
Puerto Rico	2	44	44	23	21
South Carolina	1	65	65	14	51
Tennessee	4	155	155	54	101
Texas	11	619	620	140	480
Utah	3	129	129	46	83
Vermont	1	22	22	5	17
Virgin Islands	1	2	2	0	2
Virginia	4	111	111	25	86
Washington	5	123	123	55	69
Wisconsin	2	263	263	94	169

NOTE: The following States have no Medicare-approved kidney transplant centers: Alaska, Delaware, Idaho, Montana, Nevada, New Hampshire, North Dakota, Rhode Island, South Dakota, West Virginia, Wyoming, American Samoa, Guam, and Mariana Islands.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Table 34

Distribution of kidney transplants, by number of transplants and network: 1985

End stage renal disease network	Centers reporting	Transplants	Number of transplants									
			0-15		16-50		51-100		101-200		201 or more	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	175	7,695	37	21.1	87	49.7	36	20.6	14	8.0	1	0.6
01	1	16	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02	6	231	1	16.7	4	66.7	0	0.0	1	16.7	0	0.0
03	2	375	0	0.0	0	0.0	0	0.0	1	50.0	1	50.0
04	11	540	0	0.0	9	81.8	1	9.1	1	9.1	0	0.0
05	5	207	2	40.0	1	20.0	2	40.0	0	0.0	0	0.0
06	3	157	0	0.0	2	66.7	1	33.3	0	0.0	0	0.0
07	3	319	0	0.0	0	0.0	2	66.7	1	33.3	0	0.0
08	4	113	2	50.0	1	25.0	1	25.0	0	0.0	0	0.0
09	10	274	3	30.0	6	60.0	1	10.0	0	0.0	0	0.0
10	6	105	2	33.3	4	66.7	0	0.0	0	0.0	0	0.0
11	11	620	4	36.4	2	18.2	2	18.2	3	27.3	0	0.0
12	6	131	2	33.3	4	66.7	0	0.0	0	0.0	0	0.0
13	2	263	0	0.0	0	0.0	1	50.0	1	50.0	0	0.0
14	10	317	4	40.0	4	40.0	2	20.0	0	0.0	0	0.0
15	8	330	1	12.5	4	50.0	3	37.5	0	0.0	0	0.0
16	2	102	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0
17	6	228	1	16.7	4	66.7	1	16.7	0	0.0	0	0.0
18	7	364	2	28.6	3	42.9	1	14.3	1	14.3	0	0.0
19	4	288	0	0.0	1	25.0	3	75.0	0	0.0	0	0.0
20	5	173	2	40.0	2	40.0	1	20.0	0	0.0	0	0.0
21	5	151	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
22	8	536	2	25.0	3	37.5	1	12.5	2	25.0	0	0.0
23	5	213	2	40.0	1	20.0	1	20.0	1	20.0	0	0.0
24	7	323	0	0.0	4	57.1	2	28.6	1	14.3	0	0.0
25	7	376	0	0.0	3	42.9	3	42.9	1	14.3	0	0.0
26	6	162	2	33.3	3	50.0	1	16.7	0	0.0	0	0.0
27	2	95	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0
28	10	314	2	20.0	6	60.0	2	20.0	0	0.0	0	0.0
29	3	46	2	66.7	1	33.3	0	0.0	0	0.0	0	0.0
30	4	111	1	25.0	2	50.0	1	25.0	0	0.0	0	0.0
31	3	99	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0
32	3	116	0	0.0	2	66.7	1	33.3	0	0.0	0	0.0

NOTE: Percents may not add to 100 because of rounding.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the End Stage Renal Disease Facility Survey, 1985.

Veterans' Administration dialysis statistics

As of December 31, 1985, there were 57 Veterans' Administration (VA) dialysis centers and 26 VA satellite centers reporting the status of dialysis patients. The statistics displayed in Table 35 include 812 patients (excluding acute dialysis) who were dialyzing in 14 Medicare-approved facilities.

Data on the number of continuous ambulatory peritoneal dialysis (CAPD) patients are not captured as a separate category. However, it is presumed that a large portion of the 18 percent of peritoneal patients are on CAPD.

Approximately 1,201 patients, or 30 percent of the total VA dialysis population, are in the home setting.

Table 35

Number of patients for Veterans' Administration (VA) dialysis activities, by type of dialysis: 1984-85

Type of dialysis	Dialysis center patients	Satellite dialysis center patients December 31, 1984	Contract fee	Dialysis center patients	Satellite dialysis center patients December 31, 1985	Contract fee
Modalities (VA facilities)	3,030	347	—	3,025	302	—
Acute hemodialysis	100	20	—	100	18	—
Acute peritoneal dialysis	6	1	—	7	1	—
Assisted hemodialysis	1,283	261	—	1,388	207	—
Assisted peritoneal dialysis	54	3	—	77	14	—
Limited hemodialysis	270	17	—	224	42	—
Limited peritoneal dialysis	23	0	—	8	0	—
Home self-hemodialysis training	42	1	—	36	1	—
Home self-peritoneal dialysis training	38	0	—	2	1	—
Home hemodialysis	674	30	—	610	8	—
Home peritoneal dialysis	540	14	—	573	10	—
Contract fee dialysis	—	—	745	—	—	664
Hemodialysis	—	—	716	—	—	638
Peritoneal dialysis	—	—	29	—	—	26

SOURCE: Veterans' Administration. Department of Medicine and Surgery, Division of Clinical Affairs, Medical Service Section, 1984-85.

Reimbursement and utilization

Following are Tables 36 and 37, displaying reimbursement, enrollment, per capita reimbursement, and type of service reimbursement figures for the Medicare end stage renal disease program.

Medicare inpatient hospital use, by age interval, 1984

In 1984 there were 98,962 ESRD beneficiaries who were eligible for Medicare benefits for at least part of the year. The analysis that follows considers inpatient utilization separately for each patient group. For the purposes of this analysis, these persons were divided into the following mutually exclusive and exhaustive categories.

Table 36

Medicare reimbursements, by enrollees and per capita reimbursements for persons with end stage renal disease: 1974-84

	Reimbursements		Enrollment		Reimbursement per enrollee	
Year	Amount in millions	Percent change	Number thousand	Percent change	Amount	Percent change
1974	$228..5	—	16.0	—	$14,300	—
1975	361.1	58.0	22.7	41.9	15,900	11.2
1976	512.2	41.8	28.9	27.3	17,720	11.4
1977	641.3	25.2	34.8	20.4	18,420	3.9
1978	800.0	24.7	43.5	25.0	18,390	-0.2
1979	1,010.7	26.3	54.4	25.1	18,579	1.0
1980	1,252.2	23.8	61.9	13.8	20,229	8.9
1981	1,476.2	17.9	70.4	13.7	20,969	3.7
1982	1,660.9	12.5	77.9	10.7	21,321	1.7
1983	1,893.6	14.0	86.5	11.0	21,891	2.7
1984	1,953.5	3.2	92.8	7.3	21,051	-3.8
ACRG[1]	—	23.9	—	19.2	—	3.9

[1] Annual compound rate of growth, all calculations are based on unrounded numbers.

NOTE: Data are incomplete for most recent years due to continual updating of the payment files.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Weekly health insurance merge record, June 1986.

Table 37

Medicare end stage renal disease reimbursements, by type of service: 1974-84

		Type of service			
Year	Total in millions	Outpatient	Inpatient	Physician supplier[1]	Other[2]
1974	$228.5	$135.5	$64.9	$27.6	$.5
1975	361.1	205.2	99.1	55.7	1.1
1976	512.2	289.6	136.3	84.5	1.8
1977	641.3	368.0	164.1	106.8	2.4
1978	800.0	453.0	208.9	135.2	2.9
1979	1,010.7	557.9	267.9	181.2	3.7
1980	1,252.2	665.8	343.6	238.3	4.5
1981	1,475.9	732.4	434.9	303.2	5.4
1982	1,660.9	782.0	518.1	354.3	6.5
1983	1,893.6	854.2	621.4	408.1	9.9
1984	1,953.5	843.9	710.1	387.0	12.5

[1] Includes physician services and home dialysis treatments.
[2] Includes home health and skilled nursing facility.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Weekly health insurance merge records, June 1986.

Persons on dialysis for the entire eligible year

In 1984, the patient populatioon on dialysis for the entire year numbered 78,769 and comprised 79.6 percent of all ESRD Medicare beneficiaries. Table 38 shows the distribution of these patients by age with the number of inpatient days and discharges associated with each group. This group is older than the total ESRD beneficiary population with 55 percent being 55 years of age or over. This dialysis population was hospitalized 97,676 times and accounted for 864,034 days of inpatient care. This utilization resulted in a discharge rate per 1,000 beneficiaries of 1,240, a days of care rate per 1,000 beneficiaries of 10,969 and an average length of stay per discharge of 8.8 days. With the exception of the youngest age group (0-14 years of age), there was a direct relationship between age and inpatient use. Compared with persons 15-24 years of age, persons 65 years of age or over were hospitalized 40 percent more (1,010 discharges per 1,000 and 1,410 dischargers per 1,000, respectively) and spent 86 percent more days as an inpatient (7,365 days per 1,000 and 13,721 per 1,000, respectively).

Persons receiving a transplant

In 1984 there were 5,820 Medicare beneficiaries who received a kidney transplant. They accounted for 5.9 percent of the entire ESRD Medicare beneficiary population. The utilization of inpatient care by this population is shown in Table 39. In contrast to the dialysis population, the transplant population is much younger, with only 9.0 percent 55 years of age or older. Because of the transplant stay itself and associated inpatient stays both before and after the transplant stay, this population experiences high hospitalization rates. The 5,820 persons in this group had 13,531 hospitalizations and were hospitalized for a total of 181,477 days. This resulted in a discharge rate of 2,325 discharges per 1,000 beneficiaries and a days of care rate of 31,182 days per 1,000 beneficiaries. The lowest discharge and days of care rates were experienced by the 0-14 years of age group. For the remaining persons there was not much difference in utilization by age group. There was only an 8 percent difference in days of care per 1,000 between persons 15-24 years of age and persons 55-64 years of age (30,094 and 32,361, respectively).

Table 38

Discharge rates for Medicare dialysis patients, by days of care rates and average length of stay: 1984

Age group	Number of persons	Number of inpatient days	Number of inpatient discharges	Discharges per 1,000 persons	Days per per 1,000 persons	Average length of stay
Total	78,769	864,034	97,676	1,240	10,969	8.8
Under 14 years	628	5,759	679	1,081	9,170	8.5
15-24 years	2,897	21,335	2,925	1,010	7,365	7.3
25-34 years	7,979	66,119	8,470	1,062	8,287	7.8
35-44 years	10,536	96,019	11,784	1,118	9,113	9.1
45-54 years	13,628	129,137	15,572	1,143	9,476	8.3
55-64 years	20,125	230,421	25,860	1,285	11,449	8.9
65 years or over	22,976	315,244	32,386	1,410	13,721	9.7

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1984.

Table 39

Discharge rates for Medicare kidney transplant patients, by days of care rates and average length of stay: 1984

Age group	Number of persons	Number of inpatient days	Number of inpatient discharges	Discharges per 1,000 persons	Days per per 1,000 persons	Average length of stay
Total	5,820	181,477	13,531	2,325	31,182	13.4
Under 14 years	318	8,700	712	2,239	27,358	12.2
15-24 years	816	24,557	1,887	2,313	30,094	13.0
25-34 years	1,603	50,787	3,847	2,400	31,682	13.2
35-44 years	1,487	46,853	3,484	2,343	31,508	13.4
45-54 years	1,070	33,458	2,411	2,253	31,269	13.9
55-64 years	490	15,957	1,108	2,261	32,563	14.4
65 years or over	36	1,165	82	2,278	32,361	14.2

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1984.

Persons receiving a transplant in a year prior to 1984, with a functioning graft throughout 1984

This group represents the successful transplants from previous years. The 13,494 persons in this group accounted for 13.6 percent of all ESRD Medicare beneficiaries in 1984. Table 40 presents the inpatient utilization for this patient population. The age distribution for this group is similar to that of persons transplanted in 1984. Fifty-six percent of these persons are between the ages of 25 and 44. The utilization of inpatient care is much less for this group than for either dialysis or transplant patients. This group was hospitalized 8,337 times for a total of 73,580 days. This amounts to a discharge rate of 618 per 1,000 beneficiaries and a days of care rate of 5,453 per 1,000 beneficiaries. With the exception of the youngest and oldest age groups, in which there were few patients, there was a direct relationship between inpatient use and age. Persons 55-64 years of age were hospitalized 38 percent more often than persons 15-24 years of age (689 discharges per 1,000 and 500 discharges per 1,000, respectively) and experienced 88 percent more inpatient days (7,265 days per 1,000 and 3,874 days per 1,000, respectively).

Persons receiving a transplant in a year prior to 1984, with a kidney graft failure in 1984

This group of ESRD beneficiaries represents those persons who received a kidney transplant before 1984 and experienced a graft failure in 1984. There were 878 of these persons, representing 0.9 percent of the total ESRD Medicare beneficiary population. Table 41 presents the inpatient utilization rates for these persons. The table shows that the rejection of a transplant is associated with a high rate of hospitalization. These persons accounted for 2,413 hospitalizations and a total of 23,075 inpatient days. This amounts to a discharge rate of 2,413 discharges per 1,000 beneficiaries and a days of care rate of 26,281 per 1,000 beneficiaries. There is a slight direct relationship between age and utilization in this patient population with persons 45-54 years of age experiencing 24 percent more inpatient days than persons 15-24 years of age.

Table 40

Discharge rates for functioning graft patients, by days of care rates and average length of stay for ESRD[1] beneficiaries: 1984

Age group	Number of persons	Number of inpatient days	Number of inpatient discharges	Discharges per 1,000 persons	Days per per 1,000 persons	Average length of stay
Total	13,494	73,580	8,337	618	5,453	8.8
Under 14 years	459	2,143	276	601	4,669	7.8
15-24 years	1,905	7,380	952	500	3,874	7.8
25-34 years	4,062	20,215	2,374	584	4,977	8.5
35-44 years	3,516	20,607	2,280	648	5,861	9.0
45-54 years	2,390	14,931	1,655	692	6,247	9.0
55-64 years	1,066	7,745	734	689	7,265	10.6
65 years or over	96	559	66	688	5,823	8.5

[1] End stage renal disease.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1984.

Table 41

Discharge rates for graft failure patients, by days of care rates and average length of stay for ESRD[1] beneficiaries: 1984

Age group	Number of persons	Number of inpatient days	Number of inpatient discharges	Discharges per 1,000 persons	Days per per 1,000 persons	Average length of stay
Total	878	23,075	2,413	2,748	26,281	9.6
Under 14 years	39	899	95	2,436	23,051	9.5
15-24 years	139	3,356	356	2,561	24,144	9.4
25-34 years	242	6,047	683	2,822	24,988	8.9
35-44 years	240	6,718	697	2,904	27,992	9.6
45-54 years	146	4,357	409	2,801	29,842	10.7
55-64 years	64	1,410	147	2,297	22,031	9.6
65 years or over	8	288	26	3,250	36,000	11.1

[1] End stage renal disease.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1984.

Hospitalization for ancillary problems

For the purposes of this report, ancillary hospitalizations were defined as all hospitalizations other than transplants. This is a necessary simplification because many hospitalizations are related to the transplant event, either before the actual transplant or afterward, such as rejection episodes. However, it is not possible to completely identify which hospital stays are transplant "related." Therefore, the nontransplant stays of transplant patients are considered to be ancillary hospitalizations.

Data

The basis data were taken from the 1982 Medicare Provider Analysis and Review File (MEDPAR), which is a 20-percent sample of hospital stays. This sample of stays includes procedure coding so it was possible to determine average charges and length of stay for transplant and nontransplant stays. The 1982 MEDPAR contained a slight shortfall (about 1 percent) at the time of this analysis. Thus, the figures were adjusted upward to approximate costs for 100 percent of stays. Hospital covered charges and covered days of care were estimated directly from the MEDPAR records.

Results

Table 42 summarizes the results of this analysis. In 1982, Medicare ESRD patients had a total of 100,051 discharges. Of the total discharges, 57 percent were nonsurgical, 38 percent included a surgical procedure other than transplant, and the remaining 5 percent were for transplants.

Inpatient charges amount to almost $679 million for this population. Because of the relatively high cost of transplant stays, over one-fifth (22 percent) of all inpatient charges were for transplant stays. Overall, the average charge per stay for the ESRD population in 1982 was $6,786. The average transplant stay had a charge of $30,705, while the average ancillary (i.e., nontransplant) hospital stay had a charge of $5,550. Of the total ancillary stays, the average for surgical stays was $8,655.

Medicare reimbursements are not equal to hospital charges. Applying the national ratio of Medicare reimbursements to charges gives an estimate of the costs to Medicare for ESRD hospitalizations. In 1982 the cost to charges ratio was .672. That is, Medicare paid hospitals an average of 67.2 percent of charges. For all ESRD patients, estimated Medicare inpatient hospital payments were $456 million in 1982; $101 million for transplants, and $335 million for nontransplant (or ancillary) stays.

Nonsurgical stays comprised 57 percent of all stays, while the nontransplant surgical stays were 38 percent of the total. However, because of the higher costs of surgical stays, the nontransplant surgical stays accounted for 49 percent of all reimbursements. The estimated Medicare reimbursements per stay are $4,560 for all discharges, $20,634 for transplants, and $3,729 for all nontransplant stays. Among nontransplant stays, nonsurgical stays average $2,335 and surgical stays average $5,816.

Table 42

Charges, estimated reimbursements, and average length of stay[1] for transplant and nontransplant hospital stays: 1982

Characteristic	All stays	Transplant stays	Nontransplant stays		
			All	Non surgical	Surgical
Number of stays	100,051	4,917	95,134	57,030	38,104
Percent	100	5	95	57	38
Charges (in thousands)	$678,946	$150,976	$572,970	$198,181	$329,789
Percent	100	22	78	29	49
Charges per stay	$6,786	$30,705	$5,550	$3,475	$8,655
Estimated reimbursement (in thousands)	$456,252	$101,456	$354,796	$133,177	$221,618
Percent	100	22	78	29	49
Estimated reimbursement per stay	$4,560	$20,634	$3,729	$2,335	$5,816
Covered days	1,092,034	140,626	951,408	497,972	453,436
Percent	100	13	87	46	42
ALOS[1]	10.9	28.6	10.0	8.7	11.9

[1] Average length of stay.

SOURCE: 1982 MEDPAR 20 percent sample of hospital stays, and Program Management and Medical Information System.

NOTE: Medicare Provider Analysis and Review File, (MEDPAR) includes discharges for a random 20 percent sample of all Medicare beneficiaries, as well as diagnostic and procedure coding.

Providers of renal care

This section discusses the growth in the number of participating renal providers furnishing some form of ESRD treatment. For the purpose of this report, all providers furnishing dialysis are called facilities and all hospitals approved to do transplants are called transplant centers.

Growth in numbers and types of providers (Figure 1):

- Since the ESRD program began in 1973, the total number of Medicare-approved renal providers has risen 241 percent, from 606 in 1973 to 1,463 in December 1985.
- The growth in the number of renal dialysis facilities has been primarily among freestanding facilities, i.e., facilities not affiliated with hospitals. In 1973, freestanding facilities represented about one out of nine renal facilities (11.2 percent); hospital units or hospital satellites made up the remaining eight out of nine (88.8 percent). By the end of 1985, more than one of every two renal facilities (51 percent) was freestanding.

Ownership or control (Table 43):

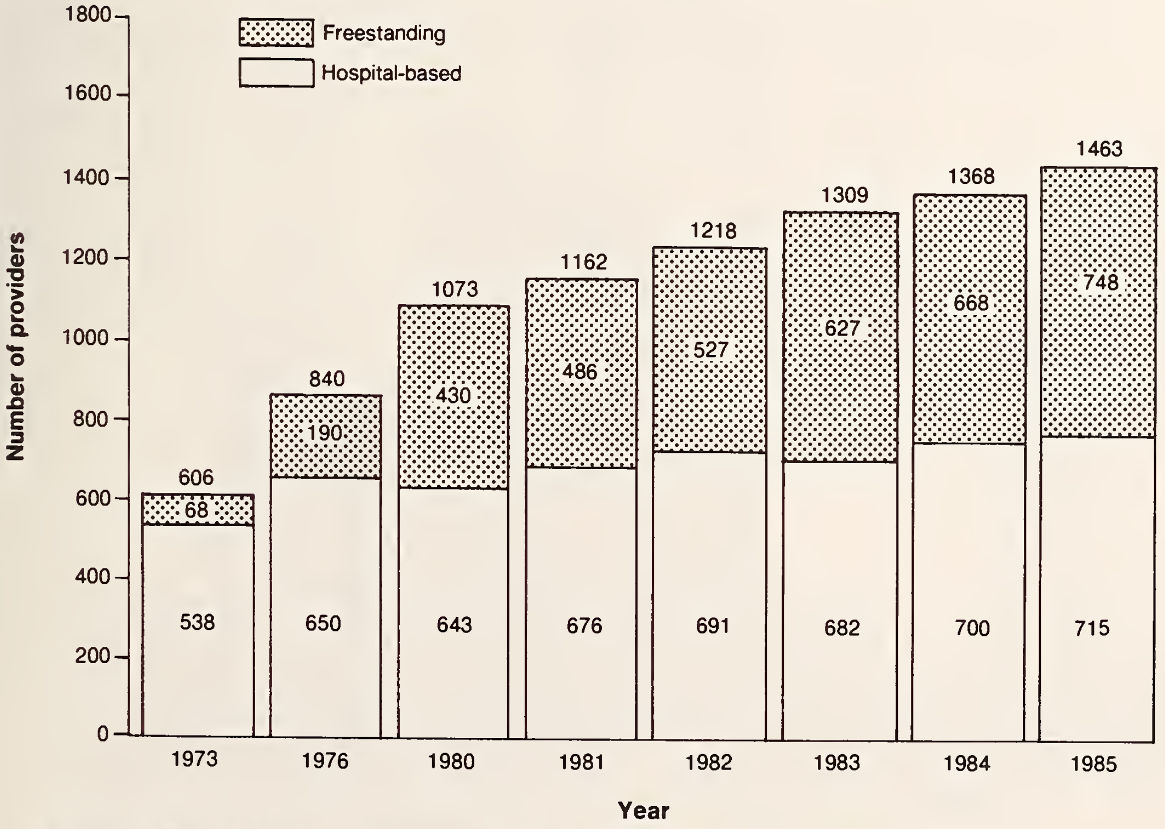
- In 1985, more than 4 out of every 10 (42 percent) renal facilities were proprietary and were almost exclusively freestanding. Proprietary facilities represent an increasing proportion of all facilities.
- Nonprofit renal facilities are mainly hospital owned and operated.

Type of renal care provided (Table 44):

- In 1985, close to 7,695 renal transplants were performed in 169 renal hospital units called transplant centers. A total of 178 units were actually approved to perform transplants. All but 25 of these transplant centers also provide outpatient dialysis services.

Figure 1

Hospital-based and freestanding Medicare end stage renal disease providers: Selected years 1973–85



SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1973–85.

- Patients not receiving kidney transplants receive dialysis care either at home or at one of the 1,380 renal facilities providing dialysis services. Of this number, 874 are dialysis facilities, which means they are approved to furnish at least one dialysis service. These facilities may be in either a hospital (126) or nonhospital (748) setting.
- Another 506 locations are called dialysis centers. These were hospital units which, in addition to providing dialysis service(s), are also approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services. Of the total number of dialysis centers, 147 were also transplant centers.
- Finally, 52 renal dialysis centers were defined as inpatient care centers because they provide backup dialysis services only, and 20 percent or less of their dialysis is performed on an outpatient basis.

Regional comparison of renal dialysis facilities and populations:

- Across the country there was more than a threefold variation in the proportion of all facilities that are freestanding, from a low of 27 percent in the New York Region (Appendix F) to a high of 78 percent in the Atlanta Region.
- Most of the services and supplies needed by people with permanent kidney failure were covered only by supplementary medical insurance (SMI), e.g., outpatient maintenance dialysis, self-dialysis training, and home dialysis. SMI is the part of Medicare that pays for these dialysis sessions, which are the majority of services received by ESRD beneficiaries not receiving a transplant. While the number of ESRD SMI enrollees varied considerably by region (Figure 2), ESRD enrollees as a percent of total enrollees is relatively constant across regions (Figure 3).
- A dialysis station is a treatment area within a facility, designed and equipped to provide adequate and safe dialysis therapy, as well as privacy and comfort for patients. The number of dialysis stations per 1,000 ESRD SMI enrollees varies significantly by region, from a low of 95 in the Seattle Region to a high of 226 in the Atlanta Region; however, those regions such as the Seattle Region with low outpatient dialysis stations may have a high home dialysis population.

Table 43

Number and percent of certified end stage renal disease providers, by type of ownership: 1982-85

	1982		1983		1984		1985	
Ownership	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	1,218	100.0	1,309	100.0	1,368	100.0	1,463	100.0
Proprietary	437	35.9	504	38.5	552	40.4	616	42.1
Hospital-based	14	1.1	14	1.1	23	1.7	26	1.8
Freestanding	423	34.7	490	37.4	529	38.7	590	40.3
Nonprofit	781	64.1	805	61.5	816	59.6	847	57.9
Hospital-based	677	55.6	668	51.0	677	49.4	689	47.1
Freestanding	104	8.5	137	10.5	139	10.2	158	10.8

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1982-85.

Table 44

Number of certified end stage renal disease providers of service, type of service, number of approved dialysis stations, by region: December 1985

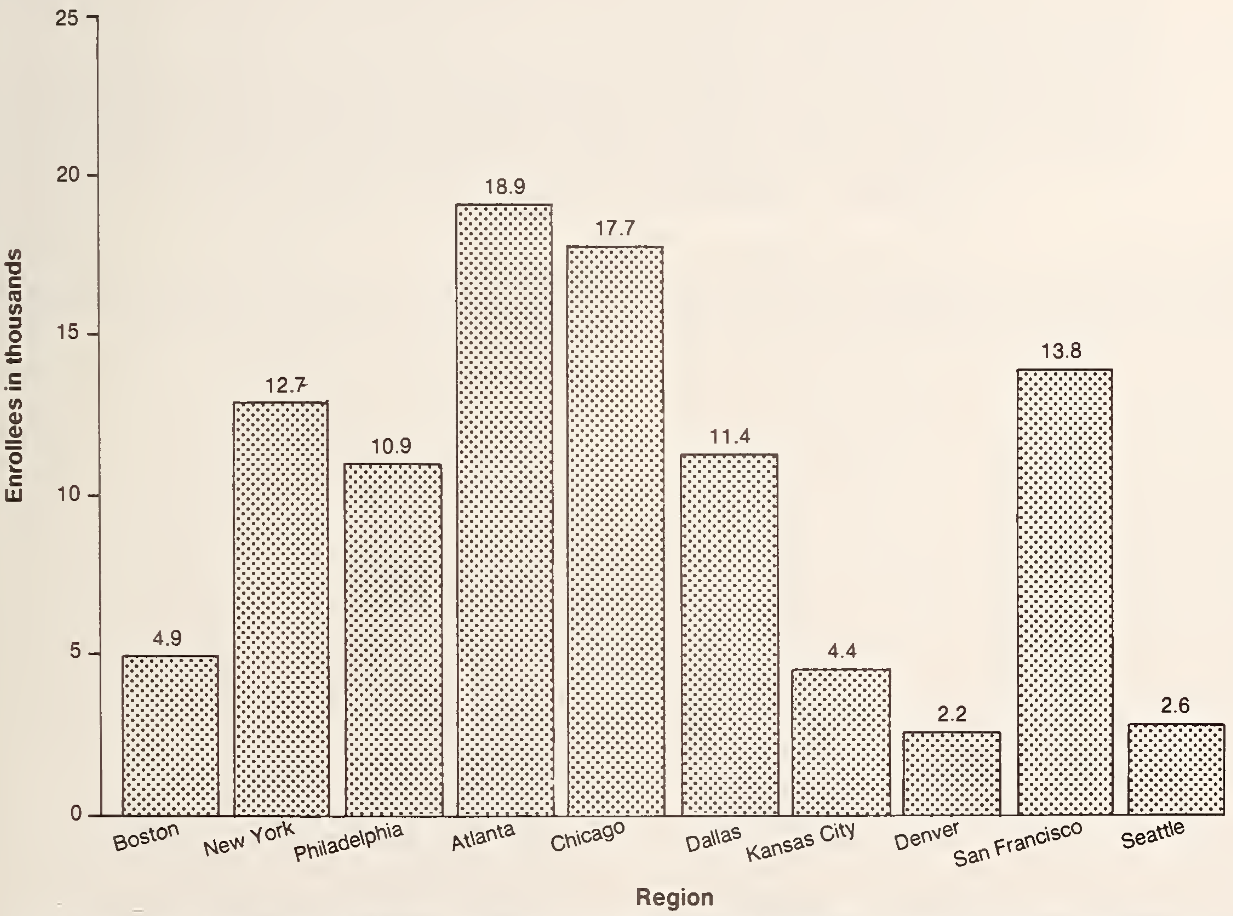
Region	Total providers of service[1]	Hospital transplant centers	Outpatient dialysis facilities			Inpatient hospital dialysis centers	Approved dialysis stations		Facilities training in self-dialysis
			Total	Hospital	Freestanding		Total	Number per 1,000 enrollees	
All regions	1,463	178	1,380	632	748	52	17,845	177	989
Boston	58	13	57	40	17	0	698	142	51
New York	147	19	146	104	39	0	1,752	138	95
Philadelphia	192	20	186	75	109	6	2,361	217	140
Atlanta	294	23	280	53	228	10	4,262	226	178
Chicago	212	36	197	140	57	12	2,665	151	154
Dallas	192	24	177	65	111	5	2,264	199	117
Kansas City	65	14	62	38	20	3	676	154	60
Denver	46	5	40	24	14	4	366	166	28
San Francisco	225	18	207	70	140	11	2,554	185	150
Seattle	32	6	28	15	13	1	247	95	16

[1] Categories do not add to total because 147 hospital transplant centers also provide outpatient services and are counted again in that category.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, December 1985.

Figure 2

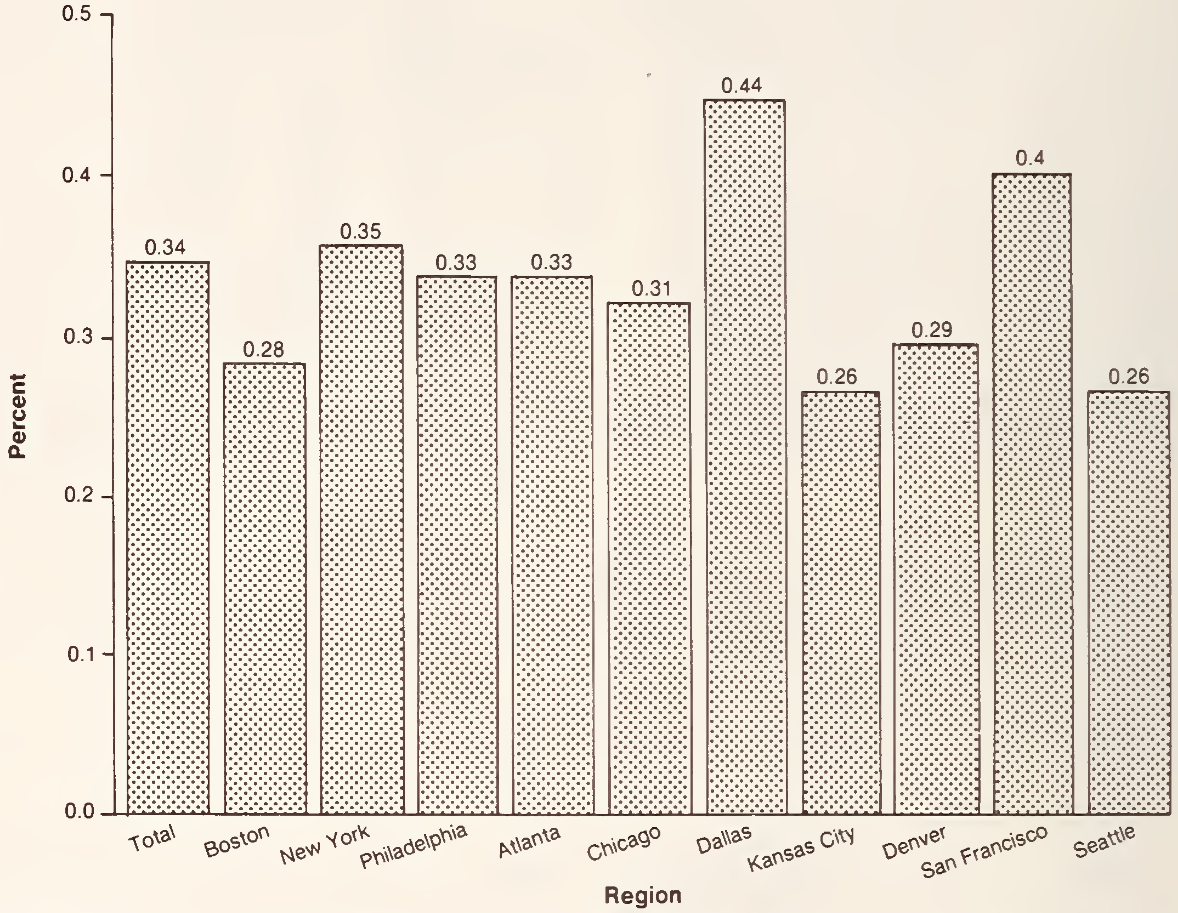
Number of Medicare supplementary medical insurance end stage renal diseases enrollees, by region: July 1985



SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy, Division of Information Analysis.

Figure 3

Medicare end stage renal disease enrollees as a percent of total supplementary medical insurance enrollees, by region: July 1984



SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy, Division of Information Analysis.

Survival analyses

This section describes recent trends in the survival rate of patients on renal dialysis. The analysis covers the period from January 1, 1980, through December 31, 1984, and includes all Medicare enrollees with end stage renal disease (ESRD) who were enrolled during that time.

Background

There were a number of changes occurring in or otherwise affecting the ESRD program over the observation period. These include:

- An increasing incidence rate (rate of new persons on dialysis).
- An apparent increase in severity, as indicated by the age distribution of ESRD patients and the percent of ESRD patients with diabetes.
- An increasing percent of patients on continuous ambulatory peritoneal dialysis (CAPD).
- An increasing rate of kidney transplantation.
- The increasing practice of reusing dialysis filter elements.
- The introduction of the composite rate payment for dialysis.
- The introduction of the Medicare prospective payment system (PPS) for reimbursing hospitals.

An increasing incidence rate and severity are indicators of a more severely ill ESRD population. To the extent that recently entitled ESRD beneficiaries are more severely ill than previously entitled ESRD beneficiaries, mortality rates should be expected to increase. The analysis attempts to control for changes in illness level. It is certainly possible that there are other changes in severity that are unmeasured that could impact on mortality levels. Substantial clinical information, in addition to primary cause of renal failure, would be needed to adequately control severity levels.

Continuous ambulatory peritoneal dialysis, kidney transplantation, and the practice of reusing dialysis filter elements are changes that have been taking place in practice patterns. CAPD is the fastest growing type of dialysis therapy. There is no evidence that CAPD has been associated with higher mortality rates. However, CAPD patients could not be distinguished from hemodialysis patients in this analysis. The increase in kidney transplantations could affect dialysis mortality if the recipients of kidney transplantation were healthier than other dialysis patients. The effect of transplantation would then be to increase patient severity among the remaining dialysis patients by removing more of the healthier patients. Although there were substantial increases in transplantation in 1983 and 1984 (about 14 percent each year), there is no evidence that recipients of transplants are healthier than other renal failure patients. The life table method used in this analysis includes the survival experience of transplant patients for the period prior to transplantation.

The practice of reuse of dialysis filters has been increasing for a number of years. Each year the Center for Disease Control, with the cooperation of the Health Care Financing Administration, conducts a surveillance of dialyzer reuse and its effect on rates of hepatitis. To date, no relationship has been found.

Composite rate for dialysis and PPS are payment mechanisms implemented by the Health Care Financing Administration in 1983. The composite rate for dialysis is a payment based on the weighted average audited costs of providing facility and home hemodialysis. To the extent that home dialysis is less expensive and is appropriate for a patient, it gives the dialysis facility the incentive to move patients to the home setting. Under the composite rate, hospital-based and independent ESRD facilities are paid a weighted average of the cost of caring for facility-based and home-dialysis individuals. The prospective payment system began in October 1983 and was phased in according to individual hospital accounting years during fiscal year 1984. The ESRD composite rate was implemented in August 1983, went into effect for all facilities simultaneously, and relates to care that all dialysis patients receive each week, whereas prospective payment is only related to inpatient care.

The extent to which any or all of the above factors might contribute to dialysis patient mortality cannot be determined from this analysis. However, the analysis was structured to control for potential changes in patient case-mix.

Methods and data

Computation of survival rates for dialysis patients requires a date of renal failure onset and a date of death. Dates of death were taken from enrollment records that are maintained for all Medicare beneficiaries. The determination of renal failure onset was defined as the date of first dialysis and was taken from the patient medical evidence record (HCFA–2728), the outpatient dialysis record (HCFA-1483), now known as the HCFA–1450, or from the entitlement records.

Survival rates were calculated (for a period of 1 year) using a standard actuarial modified life-table analysis. This method is used to calculate mortality rates from a given start date (such as date of renal failure) until death or end of the observation period (in this study, 1 year from the start date). It also accounts for the survival experience of persons who exit the study for any other reason such as kidney transplantation. In this way the survival experience of transplant recipients prior to transplant is included as part of the dialysis survival rate.

In preliminary analyses, patients were followed from the date of renal failure until death, a kidney transplant, or 365 days from the renal failure date, whichever came first. Each year's survival rate was based on patients initiating dialysis treatment during that year. The preliminary results suggested a potential shift in severity of illness among newly diagnosed patients. Table 45 shows the number of newly treated ESRD patients in the Medicare population by year. From 1980–84 the number of newly treated patients increased from 18,392 to 25,859—a compound annual rate of increase of 8.9 percent. This increase was not consistent across types of patients. For patients age 65–74 years, the rate of increase was 11.7 percent per year. For patients 75 years of age or over, the rate of increase was 20.7 percent. The large increase among persons 65 years of age or over could be because of two factors. First, it is likely that dialysis therapy is being extended to a more severely ill group of elderly patients than in previous years. Second, there was a change in the use of the patient medical evidence form during this time period. Prior to 1982, the patient medical evidence record was effectively a voluntary form filled out by providers when renal failure occurred. Beginning in 1982, the form was made a mandatory condition of Medicare entitlement for persons whose entitlement was because of ESRD only. Compliance with this form subsequently increased. Although aged persons' entitlement does not depend on this form, it is possible that some of the increase in incidence among the aged is an artifact of better reporting. This could potentially bias the mortality results if the better reporting was among aged persons with higher death rates.

Preliminary analysis among newly treated Medicare patients suggest that such a trend may be occurring. Mortality rates among the aged increased with the increase in incidence. Therefore, the analysis was restructured to help control for this potential bias. The analysis is based on dialysis patients alive as of January 1 of each year (not just newly treated patients). In addition, the analysis is limited to those patients who had survived at least 1 year prior to the January 1 start date. In this way, the effects of changes in severity among newly treated patients is diminished.

Table 45

Medicare end stage renal disease program incidence, by selected characteristics: 1980-84

Characteristic	1980	1981	1982	1983	1984	Annual percent change
Total	18,392	19,263	21,733	24,659	25,859	8.9
Age						
Under 14 years	375	332	418	379	435	3.8
15-24 years	1,082	1,109	1,165	1,094	1,150	1.5
25-34 years	2,096	2,179	2,443	2,440	2,596	5.5
35-44 years	2,230	2,367	2,587	2,814	2,987	7.6
45-54 years	3,171	3,227	3,523	3,713	3,817	4.7
55-64 years	4,318	4,691	5,238	5,679	6,143	9.2
65-74 years	3,766	3,936	4,546	5,809	5,855	11.7
75 years or over	1,354	1,422	1,813	2,731	2,876	20.7
Mean age	52.6	52.9	53.3	55.3	55.1	1.2
Sex						
Male	10,310	10,702	12,029	13,589	14,362	8.6
Female	8,082	8,561	9,704	11,069	11,497	9.2
Race						
White	12,510	13,233	14,972	16,603	17,507	8.8
Black	4,789	4,930	5,798	6,887	7,158	10.6
Other	637	682	817	1,003	1,082	14.2
Unknown	456	418	146	166	112	-29.6
Primary disease						
Diabetes	2,212	3,599	4,957	5,823	6,868	32.7
Glomerulonephritis	2,189	3,405	5,066	5,448	5,692	27.0
Hypertension	2,427	3,892	5,334	5,661	6,211	26.5
Other	3,424	4,342	4,555	4,843	4,973	9.8
Unknown	8,140	4,025	1,820	2,884	2,114	-28.6

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1980-84, as of September 1986.

Mortality trends

In 1980 ESRD patient survival on dialysis was 86.0 percent (Table 46). By 1984 this had decreased to 84.8 percent. However, the decline is because of a shift toward an aging population. In 1980, persons 65 years of age or over accounted for 22 percent of the dialysis population; by 1984 this had increased to 28 percent. Because aged persons have much higher death rates, this shift in the age distribution tends to lower the aggregate survival rate. Therefore, the overall survival rate was age adjusted to the age distribution of the population in 1980. Age adjusted survival rates (Table 46) varied from a low of 85.9 percent in 1981 to a high of 86.5 percent in 1982, with no discernible trend over the time period under observation.

In each year, males had survival rates slightly lower than females. White people consistently had lower survival rates than did either black people or people of all other races. Persons whose reported cause of renal failure is glomerulonephritis had survival rates ranging between 87.6 percent and 90.5 percent. Persons whose reported cause of renal failure was hypertension had survival rates between 82.7 and 85.2 percent. Persons whose renal failure was reported to be diabetes had the lowest survival rates, ranging between 73.4 and 76.6 percent. The downward trend in survival across sex, race, and diagnosis groupings is because of the age effect. Sex, race, and diagnostic group survival rates were not age adjusted.

The results of this analysis show a slightly decreasing overall crude survival rate for the ESRD population on dialysis. However, this decrease is accounted for by the aging of this population, because of rapidly increasing incidence rates among those persons 65 years of age or over. There is some evidence that the more recently treated elderly represent a more severely ill population than in previous years. Whether this is because of an expansion of treatment to more severely ill persons, or is a data reporting artifact (or some combination of the two) cannot be determined from this analysis.

Table 46

Medicare end stage renal disease survival rates of dialysis patients, by selected characteristics: 1980-84

	1980		1981		1982		1983		1984	
Characteristic	Survival rate (percent)	Number	Survival rate (percent)	Number	Survival rate (percent)	Number	Survival rate (percent)	Number	Survival rate (percent)	Number
Total	86.0	33,206	85.5	38,345	85.7	43,324	85.1	47,708	84.8	51,788
Age adjusted total	86.0	—	85.9	—	86.5	—	86.3	—	86.3	—
Age										
Under 14 years	96.3	286	96.8	334	97.7	379	98.9	394	96.6	419
15-24 years	96.0	1,729	96.9	1,878	97.7	1,941	97.1	1,975	97.4	1,828
25-34 years	95.0	3,776	94.4	4,240	94.7	4,665	95.1	4,878	94.9	4,919
35-44 years	91.3	4,823	91.3	5,330	92.2	5,865	92.7	6,343	91.7	6,820
45-54 years	89.1	6,863	89.0	7,590	90.0	8,346	88.8	8,910	89.1	9,255
55-64 years	83.7	8,582	83.4	10,020	83.6	11,496	83.2	12,807	83.6	14,037
65-74 years	77.0	5,769	76.6	7,040	77.0	8,169	76.8	9,383	77.4	10,795
75 years or over	67.0	1,378	68.1	1,913	68.1	2,463	69.6	3,018	68.9	3,715
Sex										
Male	85.5	18,173	84.8	20,835	85.2	23,402	84.7	25,544	84.6	27,455
Female	86.5	15,031	86.2	17,508	86.2	19,920	85.6	22,162	84.9	24,331
Race										
White	85.7	21,706	84.6	24,770	84.8	27,666	84.2	30,222	83.6	32,442
Black	86.5	9,680	86.9	11,400	87.3	13,113	86.5	14,617	86.4	16,265
Other	86.2	1,036	86.9	1,230	85.4	1,433	86.4	1,616	87.7	1,828
Primary disease										
Diabetes	76.4	1,800	73.9	2,248	76.6	2,880	73.4	4,149	74.6	5,616
Glomerulonephritis	90.5	5,228	89.8	5,893	89.9	6,458	89.2	7,646	87.6	9,379
Hypertension	85.2	3,765	84.2	4,541	84.0	5,388	83.4	6,972	82.7	9,074
Other/unknown	85.8	22,413	85.7	25,663	86.0	28,598	86.2	28,941	86.6	27,719

NOTE: Includes only persons who have survived for at least 1 year prior to January 1 of reference year.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy: Data from the Program Management and Medical Information System, 1980-84.

End stage renal disease studies

Centers for Disease Control study

The Centers for Disease Control (CDC) annually surveys dialysis facilities using their Form 53.7, "National Surveillance of Dialysis-Associated Hepatitis and Other Diseases." The CDC form is mailed by HCFA to Medicare dialysis facilities along with the HCFA-2744, End Stage Renal Disease Facility Survey. As CDC surveys are received, they are forwarded to CDC for appropriate analyses.

Following is an abstract of a preliminary report entitled, "National Surveillance of Dialysis-Associated Hepatitis and Other Diseases in the United States, 1984," prepared by Miriam J. Alter, Ph.D., and Martin S. Favero, Ph.D., Hepatitis Branch, Division of Viral Diseases, and the Nosocomial Infections Laboratory Branch, Hospital Infections Program, Center for Infectious Diseases, Centers for Disease Control, Atlanta, Georgia.[1]

The report contains preliminary unpublished data which are tentative and subject to refinement or change prior to publication. These preliminary results include analyses on Incidence and Prevalence of HBV Infection, Hepatitis B Vaccine Use, Non-A, Non-B Hepatitis, Reuse and other Hemodialysis-Associated Practices and other Hemodialysis-Associated Diseases. Several tables illustrating results have been compiled.

HCFA research activities summaries

The Health Care Financing Administration (HCFA) is presently involved in many research activities that deal with or touch on the end stage renal disease program. These activities range from internal HCFA reviews to full-scope extramural studies that are covered under the grant or cooperative agreement process.

Summaries of these activities follow.

Learning From and Improving Diagnosis-Related Groups for End Stage Renal Disease Patients

Project No.:	14-C-98596/3-02
Period:	September 1984 - May 1987
Funding:	$350,000
Award:	Cooperative Agreement
Awardee:	The Urban Institute/Health Policy Center 2100 M Street, NW. Washington, D.C. 20037
Project Officer:	Paul W. Eggers Division of Beneficiary Studies

Description: The introduction of prospective payment by diagnosis-related groups (DRG's) has drastically altered the incentives in medical care. The purpose of this project is to study the responses of providers at the level of individual patients and diagnoses in end stage renal disease, an area on which abundant data are available. Specific issues to be addressed include the possibility of selection of diagnoses to maximize reimbursement, alteration of discharge and admission patterns and other forms of cost shifting, and the selection of patients for admission. Specifically, patients will be characterized in terms of major demographic and prognostic factors, including measures of severity of illness. Patterns of diagnostic categorization, admission patterns, and treatment costs will be compared for homogenous groups before and after the prospective payment system.

Status: Analytical files have been created and analysis has begun. As of August 1986, five working papers have been drafted and are under review. Five more papers are due for completion by May 1987.

Analysis of the Incidence and Cost of Outlier Cases Under the Prospective Payment System

Funding:	Intramural
Project:	Stuart Guterman
Director:	Division of Reimbursement and Economic Studies

Description: Section 603 of Public Law 98-21 requires the Secretary of Health and Human Services to examine the appropriateness of the payment policy for outlier cases (exceptionally long or costly cases) under the prospective payment system. This project is intended to examine the distribution of outlier cases and the costs of and payment for these cases by patient and hospital characteristics, in order to indicate ways in which the outlier payment methodology can be refined to better accomplish its objectives.

Status: Some preliminary analysis of case- and hospital-level data from fiscal year 1984 has been conducted. Additional analysis of fiscal year 1984 data is planned as well as analysis of fiscal year 1985 data when they become available. Complementary studies are being conducted by the Health Policy Research Centers at Boston University and the Rand Corporation.

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[1] Requests for full study results may be made to Dr. Miriam Alter, Hepatitis Branch, Centers for Disease Control, Atlanta, Georgia 30333.

Capitation Payment System for All End Stage Renal Disease Services

Project No.: 95-C-98497/9-02
Period: January 1985 - April 1991
Funding: $465,000
Award: Cooperative Agreement
Awardee: El Camino Hospital District Corporation
2500 Grant Road
Mountain View, Calif. 94042
Project Officer: Marla Aron
Division of Health Systems and Special Studies

Description: This project will develop and test a competitive capitation program under which capitation payments would cover all Medicare benefits to end stage renal disease (ESRD) patients, including transplants. The awardee will negotiate a capitation rate with the Health Care Financing Administration (HCFA). A delivery system similar to a health maintenance organization (HMO) will be developed and will include case management for ESRD patients, patient incentives, physicians' incentives and risk taking, preferred provider contracts, and quality assurance measures.

Status: During the first 18 months, El Camino focused efforts in three major areas: refining the model, collecting and analyzing data for developing a capitation rate, and trying to obtain Knox-Keene licensure to operate as an HMO. Project staff have analyzed ESRD data to develop a regional composite experience rate for ESRD. The experience of transplant patients is separated from other disease management organization (DMO) patients. The DMO is seeking exemption from Knox-Keene regulations which require risk-bearing health plans to meet certain reserve, reinsurance, and other criteria. El Camino has proposed that HCFA assume the risk for the DMO for the first year. In addition, the project has completed a stop-loss analysis, a quality assurance system, an automated management information system, and consumer marketing surveys. The project is preparing to negotiate capitation rates with HCFA.

Design of a Demonstration and Assessment of Competitive Health Insurance Proposals in the End Stage Renal Disease Program

Project No.: 14-C-98275/3-03
Period: April 1983 - April 1987
Funding: $879,694
Award: Cooperative Agreement
Awardee: The Urban Institute
2100 M Street, NW.
Washington, D.C. 20037
Project Officer: Marla Aron
Division of Health Systems and Special Studies

Description: This project will determine the feasibility of demonstrations to test competitive financing approaches in the end stage renal disease (ESRD) program, with possibilities including:

- Competitive bidding.
- Global capitation covering all medical care costs.
- Partial capitation covering only outpatient ESRD services
- Voucher payment allowing patients to share in the financial savings to cost-reducing shifts.

Status: During the second project period (May 1, 1985 - April 1986), Urban Institute assisted the Office of Demonstrations and Evaluations in implementing a competitive bidding model. The competitive bidding demonstration started April 1, 1985. The Health Care Financing Administration (HCFA) selected Riverside, California, and Denver, Colorado, as demonstration sites. All independent and hospital-based providers of outpatient dialysis services in Riverside and Denver were asked to submit a bid, not to exceed the Medicare composite rate for independent facilities, for providing maintenance dialysis services to Medicare beneficiaries. An approved competitive bid would serve as the basis of Medicare reimbursement to that facility. Beneficiaries would receive a cash incentive payment equal to 70 percent of the difference between the composite rate for independent facilities and the bid rate of the facility. Any facility not submitting a bid, or submitting a bid higher than the composite rate, would receive its normal composite rate payment. The demonstration would test whether the potential for increased case loads would induce beneficiaries to seek lower priced facilities. HCFA received no bids from Riverside. One facility in Denver bid $12 below the composite rate, but the facility withdrew from the demonstration in September 1985 because of the lack of patient transfers. During the final project period, The Urban Institute will prepare the following reports: an analysis that relates case-mix measures to cost, issues of patient and provider choice, and quality of care.

Prospective Payment System Impact on Mortality Rates: Adjustments for Case-Mix Severity

Project No.: 500-85-0015
Period: August 1986 - March 1987
Funding: $124,582
Award: Contract
Contractor: Abt Associates, Inc.
55 Wheeler Street
Cambridge, Mass. 02138
Project Officer: Paul W. Eggers
Division of Beneficiary Studies

Description: This project is congressionally mandated by the 1983 Amendments (Public Law 98-21) to the Social Security Act. The objective of this study is to develop a case-mix adjustment for use in post-admission mortality studies conducted as part of the overall evaluation of the impact of the prospective payment system on quality of care. Most measures of case mix are based on resource consumption. That is, diagnostic classifications are defined to be statistically homogeneous on resource consumption, and the relative consumption, and the relative costliness of each class of diagnoses is used as a weight in deriving the overall index value. Such case-mix indexes are of little value in studies of mortality rates. This study will develop a case-mix index that predicts the overall probability of death for a given mix of patients. This effort will develop a mortality based case-mix measure by differentiating between levels of disease severity within diagnosis-related groups (DRG's). The study will use a 20-percent sample of 1984 Medicare hospitalizations with indicators of 30-day post-admission mortality. Using the disease staging methodology, variations in severity accounts for variations in mortality. If the staging methodology increases the predictive power of DRG's in determining mortality rates, the method can then be used to determine case-mix differences between regions, providers, or across time that account for differences in mortality.

Status: The award was made in August 1986. Analytical file construction is currently under way. A report is expected to be included in the 1986 Annual Report to Congress on prospective payment.

Developing Incentive Systems to Increase the Supply of Cadaveric Kidneys for Transplants

Project No.: 14-C-98333/1-02
Period: June 1983 - March 1986
Funding: $369,311
Award: Cooperative Agreement
Awardee: Brandeis University
415 South Street
Waltham, Mass. 02254
Project Officer: Paul W. Eggers
Division of Beneficiary Studies

Description: Using survey methodologies, this project will evaluate alternative approaches to increasing the participation of nongovernment actors in organ procurement programs. The end result of the research will be a set of Health Care Financing Administration policy recommendations designed to improve the effectiveness of organ procurement networks and so increase the number of kidneys available for transplantation.

Status: The cooperative agreement was initiated June 1983. The methodology entails surveys of major participants in the organ procurement process. These include hospital administrators, directors of nursing, intensive care unit nurses, and neurosurgeons. Each group of these professionals was administered a questionnaire designed to elicit information concerning their knowledge and personal opinions about organ procurement, perceived barriers to organ procurement, and potential recommendations for improving the organ procurement process. In addition, donor families and the general public were interviewed to collect information on public attitudes toward organ procurement. Data collection has been completed, and the project is in the analysis phase. Much of the effort in 1985 and 1986 in this cooperative agreement has been in support of the National Task Force on Organ Transplantation and the Federal Office of Organ Transplantation. The results of this work have been incorporated into "Organ Transplantation: Issues and Recommendations," a report of the Task Force on Organ Transplantation. The final report from this cooperative agreement has been received and is under review. It will be available from the National Technical Information Service.

Cause and Failure to Transplant Cadaveric Human Organs

Project No.: 17-C-98728/1-01
Period: August 1986 - July 1989
Funding: $500,000
Award: Cooperative Agreement
Awardee: Brandeis University
415 South Street
Waltham, Mass. 02254
Project Officer: Paul W. Eggers
Division of Beneficiary Studies

Description: The project will determine the reasons for the high rate (19.6 percent) of wastage of cadaveric kidneys in the United States and make recommendations to reduce this loss in the future. Many studies have shown that kidney transplantation is beneficial both clinically and from a cost perspective. The major barrier to increased transplantation is organ availability. This study, through its measure of determinants of, and cures for, cadaver organ wastage, could help increase the efficiency of the organ procurement system.

Status: This project is in the early developmental stage.

Relative Effectiveness and Cost of Transplantation and Dialysis in End Stage Renal Disease

Project No.: 14-C-98372/5-04
Period: September 1983 - September 1988
Funding: $1,566,292
Award: Cooperative Agreement
Awardee: University of Michigan
Department of Epidemiology
109 Observatory Street
Ann Arbor, Mich. 48109
Project Officer: Carl Josephson
Division of Program Studies

Description: This study will perform a comprehensive assessment of the cost effectiveness of end stage renal disease treatment under different treatment modalities, an assessment of the impact of cyclosporine on transplant success, and a life-table analysis of risk factors for patient and graft survival. The study will use data from the Michigan Kidney Registry, supplemented by survey information and medical record abstractions. Because of the design of the study, it is anticipated that the project will demonstrate the utility of a longitudinal, patient-specific data system for policy decisionmaking at the Federal level.

Status: The awardee has made significant progress in all phases of this project. The basic research design is a phased cohort analysis of renal patients entering treatment modalities over two time periods, 1981-83 and 1984-86. Analysis of the data from the first cohort is being performed in the three main research areas: quality of life, survival, and cost effectiveness. Currently, the data collection activities are under way for the second cohort. Additionally, progress continues in the secondary goals of the research project, such as identifying diabetic etiological factors in end stage renal disease, using the Michigan Kidney Registry data for a variety of research purposes, and studying the relationship between immunosuppressive agents and malignant tumors.

Costs, Outcomes, and Competition in the End Stage Renal Disease Program

Project No.:	18-P-98056/3
Period:	August 1981 - September 1984
Funding:	$407,096
Award:	Grant
Grantee:	The Urban Institute 2100 M Street, NW. Washington, D.C. 20037
Project Officer:	William J. Sobaski Division of Reimbursement and Economic Studies

Description: This project will aid in the overall assessment of the end stage renal disease (ESRD) program by studying three aspects:

- The determinants of the total cost of the program.
- Some measures of the health outcomes produced by the program.
- Alternative ways of organizing and improving the services.

Particular attention will be given to the effects of competition on the cost and quality of care among facilities in an area.

Status: Three major papers have been produced thus far under this grant:

- "Pro Competitive Health Insurance Proposals and their Implications for the ESRD Program."
- "Competition and Efficiency in the ESRD Program."
- "Financial Incentives and Policy Goals of the End Stage Renal Disease Program."

The first paper concludes that there are numerous ways to induce more competitive behavior in the delivery of ESRD service, especially maintenance dialysis, although there are significant implementation problems with some strategies. The second paper concludes that analysis of cost alone cannot determine appropriate reimbursement levels, because that determination requires a prior political decision of the appropriate level of amenities. The third paper concludes that the precise legislative intent regarding the goals of the ESRD program is ambiguous, particularly on treatment objectives. In December 1984, a report of recommendations for revising ESRD system central files was received. The final report was completed in May 1986.

End Stage Renal Disease Nutritional Therapy Study

Period:	September 1984 - August 1993
Award:	Interagency Agreement
Agency:	National Institute of Diabetes and Digestive and Kidney Disease
Project Officer:	Bonnie Edington Division of Health Systems and Special Studies

Description: In accordance with the congressional mandate (Public Law 96-499), this study, known as the Modification of Diet in Renal Disease (MDRD) study, seeks to determine: (1) the extent to which the commencement of nutritional therapy in early renal disease (limiting protein and providing nutritional supplements) can retard or arrest the progression of the disease, resulting in substantive deferment of dialysis, and (2) the administrative, financial, and other aspects of making nutritional therapy generally available under Medicare. The study is being conducted jointly by the National Institutes of Health (NIH) and the Health Care Financing Administrtion (HCFA). Initiation of full-scale clinical trials will be preceded by a developmental phase and a pilot test.

Status: Phase I, the developmental phase, began in September 1984 and concluded in December 1985. This phase produced a clinical protocol, forms manual, and operation manual. Phase II, a 2-year pilot study, began in January 1986 at nine clinical sites: Harbor General Hospital, University of California at Los Angeles Medical Center, Los Angeles, California; University of Southern California School of Medicine, Los Angeles County Hospital, Los Angeles, California; John Hopkins University Hospital, Baltimore, Maryland; New England Medical Center, Boston, Massachusetts; Brigham and Women's Hospital, Boston, Massachusetts; Beth Israel Hospital, Boston, Massachusetts; Massachusetts General Hospital, Boston, Massachusetts; Vanderbilt University Medical Center, Nashville, Tennessee; and University of Iowa, Hospitals and Clinics, Iowa City, Iowa. Patients within a specific range in level of kidney function are being screened, and only those manifesting a specific minimum in the rate of disease progression (decline in kidney function) enter the 3-month baseline period. Following baseline, patients are divided into two groups, based on their level of kidney function, and, within each group, randomly assigned to one of three nutritional therapy regimens. It is hoped that at least 108 patients (12 at each site) will complete at least 18 months of nutritional therapy. After the 2-year pilot study concludes in December 1987, a third phase of the study is expected to begin. This would be a 3-to-5 year full clinical trial involving 600 to 900 patients. At the conclusion of that phase, a 1-year analysis of cost effectiveness would be undertaken by HCFA.

Severity of Illness in End Stage Renal Disease Population in Northern Florida

Project No.:	14-C-98696/4-02
Period:	September 1984 - December 1986
Funding:	$509,356
Award:	Cooperative Agreement
Awardee:	University of Florida Grinter Hall Gainesville, Fla. 32610
Project Officer:	Paul W. Eggers Division of Beneficiary Studies

Description: The purpose of this study is to develop and test measures of severity of illness that predict resource consumption levels in the end stage renal disease (ESRD) program. These measures will be based on the acute physiology and chronic health evaluation (APACHE) system, which was developed to measure therapeutic effort and resource costs in intensive care units. Two components of APACHE, the therapeutic intervention scoring system (TISS) and the acute physiology score (APS) will be adapted to the special characteristics of the ESRD patient receiving dialysis. TISS and APS will then be used to measure ESRD case mix and resource consumption.

Status: The major activity of the first year of this study involved the development of an instrument to measure severity of illness variations in the chronic hemodialysis population. The instrument includes physiologic measures, dialysis treatment variations, measures of comorbidities, as well as socioeconomic and behavioral factors. Final revisions to the instrument were made in June 1985, based on comments from a technical advisory panel and reviews of patients charts in ESRD facilities to determine data availability. Seven hemodialysis units have agreed to participate in the study. The number of patients to be included will be approximately 560. Data collection began in Fall 1985. Second-year activities mainly involved data collection. The final phase of the project involves developing scaling and weighting indices for both patient severity and resource consumption. A final report is expected in Spring 1987.

Comparison of Quality of Life of End Stage Renal Disease Patients

Project No.:	14-C-98642/5-02
Period:	September 1984 - September 1986
Funding:	$102,976
Award:	Cooperative Agreement
Awardee:	University of Minnesota Family Study Center 1114 Social Sciences Minneapolis, Minn. 55455
Project Officer:	Paul W. Eggers Division of Beneficiary Studies

Description: The objective of this study is to evaluate the quality of life of patients on different therapeutic regimens for end stage renal disease. The following groups will be compared:

- Transplant recipients randomly allocated to conventional immunosuppression.
- Transplant recipients randomly allocated to immunosuppression with cyclosporine.
- Patients on center hemodialysis.
- Patients on continuous ambulatory peritoneal dialysis.
- A historical control of patients who received transplants in 1970-73.

Clear-cut differences in survival do not necessarily distinguish among the above treatment modalities. Comparative quality of life is, therefore, an important criterion.

Status: This study is entering its second and final year. Information is available on 83 center hemodialysis patients, 510 continuous ambulatory peritoneal dialysis (CAPD) patients, and 91 transplant recipients (40 receiving conventional immunosuppressive therapy and 51 cyclosporine). There are pronounced differences in objective measures of rehabilitation. More than 80 percent of male transplant recipients with functioning grafts work or are in school at least part-time (a proportion that is consistent with that seen nationally), but only 30 percent of male center hemodialysis patients have achieved an equal level of rehabilitation. Of the male CAPD patients, 46 percent work or attend school at least part-time. Patterns among female patients are similar, but less pronounced. Transplant patients also have the best subjective sense of well-being, but the differences are smaller in magnitude. Transplant patients who received cyclosporine score consistently higher on measures of well-being than those on conventional therapies, in part because of the lower incidence of rejection episodes and of complications of steroid therapy.

Waiver for the Northwest Kidney Center, Seattle, to be Reimbursed Directly for Providing Home Dialysis Training Services

Project No.:	95-C-98485/0-02
Period:	November 1984 - October 1987
Award:	Cooperative Agreement
Awardee:	Northwest Kidney Center 700 Broadway Seattle, Wash. 98118
Project Officer:	Marla Aron Division of Health Systems and Special Studies

Description: The Northwest Kidney Center (NKC) is conducting a pilot test of a home dialysis training program. Under this program, NKC will provide home dialysis training services to 6-10 patients per year at the Central Washington Hospital in Wenatchee, and St. Peter Hospital in Olympia, Washington. NKC will provide training in the homes of one to two hepatitis B antigen positive patients per year. The home dialysis training will be provided for 2-3 weeks depending on the individual patient. Training will be on a 5-day-week basis with 3 weekly hemodialysis, or continuously in the case of continuous ambulatory peritoneal dialysis. The goal is to show that a regionalized home dialysis training program will increase the number of patients choosing to dialyze at home.

Status: During the second project year, the demonstration population could include patients who carry the human t-cell lymphotropic virus type-III antibody. The Olympia Peninsula Kidney Center withdrew from the demonstration after hiring a home dialysis training nurse.

Comparative Analysis of the Cost and Outcomes of Kidney Transplants

Project No.:	14-C-98564/0-03
Period:	July 1984 - July 1987
Funding:	$1,009,010
Award:	Cooperative Agreement
Awardee:	Battelle Human Affairs Research Center 4000 NW. 41st Street Seattle, Wash. 98105
Project Officer:	Paul W. Eggers Division of Beneficiary Studies

Description: This is a multicenter observational study of the impact of cyclosporine on renal transplantation. A sample of 300 patients contributed by eight major centers experienced in the use of cyclosporine will be studied in depth. Detailed information on outcomes (mortality, complications, and disability) and costs will be collected on this sample and analyzed in terms of major prognostic factors. In addition, extensive data of a medical or biologic and of a sociologic nature will be obtained. The representativeness of the sample will be validated by comparison with the universe of patients treated with cyclosporine for whom more limited information is available in the Health Care Financing Administration Medical Information System data base.

Status: A collaboration with the scientific studies committee of the American Society of Transplant Surgeons was formalized, and a working group of physicians to advise and guide the biomedical component of the study was empaneled and met twice. The supplementary questionnaires designed to gather medical data were drafted and finalized after review by the medical working group. Patient selection criteria have been finalized. Participating transplant centers have been selected, and subcontracts for data acquisition have been negotiated. The second year of the project has been devoted largely to data collection. Five transplant centers agreed to participate in the study: University of California, San Francisco; Ohio State University; University of Pittsburgh; University of Texas, Houston; and University of Wisconsin. As of May 1, 1986, 159 patients had been recruited into the study.

End Stage Renal Disease Annual Report to Congress

Funding:	Intramural
Project:	Paul W. Eggers
Director:	Division of Beneficiary Studies

Description: The Office of Rsearch and Demonstrations (ORD) has the responsibility for producing three sections included in each year's Report to Congress (Public Law 95-292). These are: end stage renal disease (ESRD) patient morbidity, ERSD patient mortality, and ancillary hospital costs.

Status: ORD has produced the three sections above for the following reports:
- *1981 ESRD Annual Report to Congress,* HCFA Pub. No. 82-02144.
- *1982 ESRD Annual Report to Congress,* Medicare Annual Report, Fiscal Year 1981, HCFA, Pub. No. 02156.
- *1983 ESRD Annual Report to Congress,* Medicare Annual Report, Fiscal Year 1982, HCFA Pub. No. 02157.
- *1984 ESRD Annual Report to Congress,* Medicare Annual Report, Fiscal Year 1983, HCFA Pub. No. 02157.
- *1985 ESRD Annual Report to Congress,* submitted for departmental approval.

Appendix A

Glossary of terms

Access device—A piece of equipment or a mechanism designed for access to the patient's bloodstream (for hemodialysis) or to the peritoneal membrane (for peritoneal dialysis).

Agreement—A written document executed between an ESRD facility and another facility in which the other facility agrees to assume responsibility for furnishing specified services to patients and for obtaining reimbursement for those services.

Arrangement—A written document executed between an ESRD facility and another facility in which the other facility agrees to furnish specified services to patients but the ESRD facility retains responsibility for those services and for obtaining reimbursement for them.

Backup dialysis—A dialysis session furnished to an ESRD patient which is outside the patient's routine dialysis setting, e.g., a home patient dialyzing in the facility or an in-facility patient transferred to a back-up facility.

Backup hospital—A hospital with whom a dialysis facility has a written agreement under which inpatient hospital care or other hospital services are available promptly to the dialysis facility's patients when needed.

Beneficiary—One who is entitled to have Medicare benefits paid on his behalf.

Continuous ambulatory peritoneal dialysis (CAPD)—A type of peritoneal dialysis whereby the patient dialyzes at home, using special supplies, but without the need for a machine.

Cadaveric transplant—The surgical procedure of excising a kidney from a cadaver and implanting it into a suitable recipient.

Chronic maintenance dialysis—Dialysis which is regularly furnished to an ESRD patient in either a hospital-based, independent (non-hospital based), or home setting.

Continuous cycling peritoneal dialysis (CCPD)—A variant of CAPD in which a machine is used to make exchanges at night automatically.

Dialysis—A process of maintaining the chemical balance of the blood when the kidneys have failed; specifically a process by which dissolved substances are removed from a patient's body by diffussion from one fluid compartment to another across a semi-permeable membrane. The types of dialysis currently used are hemodialysis, peritoneal dialysis, continuous ambulatory peritoneal dialysis (CAPD), and continuous cycling peritoneal dialysis (CCPD).

Dialysis center—A hospital unit which is approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services required for the care of ESRD dialysis patients (including inpatient dialysis) furnished directly or under arrangement.

Dialysis facility—A unit (hospital-based or freestanding) which is approved to furnish dialysis service(s) directly to ESRD patients.

Dialysis station—The treatment area which is designed and equipped to provide adequate and safe dialysis therapy, as well as privacy and comfort for patients.

Dialysis treatments—The number of treatments performed for ESRD patients.

Disposition of cadaveric kidneys—The final disposition of acquired cadaveric kidneys.

End-stage renal disease (ESRD)—That stage of renal impairment which is irreversible and permanent and requires dialysis or kidney transplantation to ameliorate uremic symptoms and maintain life.

ESRD facility—A supplier of health care services that is approved to furnish at least one specific ESRD service.

ESRD network—An approved organized group of ESRD providers in a designated area which, by their type and location and because of local referral patterns, collectively furnish the necessary care for ESRD patients in the population served.

ESRD Medicare beneficiary—A person qualifying for Medicare by means of the renal disease provision of the law and eligible for the full range of benefits available under the health insurance program, not just for those services relating to renal care.

ESRD patient—A person with irreversible and permanent kidney failure.

ESRD service—Treatment or care (e.g., dialysis, transplantation, supplies) usually rendered to those diagnosed as having ESRD.

Eligibility requirements—To qualify for Medicare under the renal provision a person must have end-stage renal disease and either: be entitled to a monthly insurance benefit under Title II of the Social Security Act (or an annuity under the Railroad Retirement Act); or be fully or currently insured under Social Security (railroad work may count); or be the spouse or dependent child of a person who meets at least one of these last two requirements. There is no minimum age for eligibility under the renal disease provision. An application for Medicare must be filed (effective October 1, 1978).

Enrolled/entitled—An individual who has filed an enrollment request and meets all other eligibility requirements for Medicare can then elect to be enrolled in Part A (hospital insurance) and/or Part B (supplemental medical insurance) of the Medicare program.

Hemodialysis—A method of dialysis in which blood from a patient's body is circulated through an external device or machine and thence returned to the patient's bloodstream. Such an artificial kidney machine usually is designed to remove fluids and metabolic end products from the bloodstream by placing the blood in contact with a semi-permeable membrane which is bathed on the other side by an appropriate chemical solution referred to as dialysate.

Home patients—Those patients who maintain their own dialysis equipment at home and perform their own treatment alone or with the assistance of a helper. These are medically-able patients who perform dialysis at home after being trained.

Inpatient care only—A renal dialysis center which performs backup services for dialysis facilities and performs 20 percent or less of its dialysis on an outpatient basis.

Inpatient dialysis—Dialysis which, because of medical necessity, is furnished to an ESRD patient on a temporary inpatient basis in a hospital.

In-unit (in-facility) patients—Those patients whose dialysis is performed in a dialysis unit or facility, or who dialyze themselves in a unit or facility.

Living related donor transplant—The surgical procedure of excising a kidney from a living relative of the patient and implanting it in the patient.

Lost to follow-up (LTFU)—A category of patients whose current status is unknown to the facility which at one time had been dialyzing/following the patient.

Number of dialysis treatments given (other than home)—The number of times dialysis machines were used to provide patient treatments.

Number of centers by number of transplants—The number of centers performing a specified number of transplants for the survey period.

Number of facilities/centers surveyed—The number of individual facilities/centers completing the ESRD Facility Survey form.

Number of patients completing self-dialysis training course—The number of patients who have completed a certified training program teaching them to perform their own renal dialysis treatments in the home or on an outpatient basis alone or with the assistance of a helper.

Organ procurement—The process of acquiring donor kidneys.

Organ Procurement Agency (OPA)—An organization which performs or coordinates the performance of all the following services: harvesting of donated kidneys; preservation of donated kidneys; transportation of donated kidneys; and maintenance of a system to locate prospective recipients for harvested organs.

Patients awaiting transplant—The number of patients dialyzing at or being followed by a facility who are medically able to receive a transplant, have given consent for a transplant, and are on an active transplant list.

Patients completing self-dialysis training course—Patients who have completed a certified training program teaching them to perform their own renal dialysis treatments in the home or on an outpatient basis alone or with the assistance of a helper.

Peritoneal dialysis—A procedure that introduces dialysate into the abdominal cavity to remove waste products through the peritoneum (a membrane which surrounds the intestines and other organs in the abdominal cavity). It functions in a manner similar to that of the (artificial) semi-permeable membrane in the hemodialysis machine. Two other forms of peritoneal dialysis are continuous ambulatory peritoneal dialysis, and continuous cycling peritoneal dialysis.

Provider number—An assigned Medicare identification number for billing which consists of six positions. The first two positions represent a State code. The third and fourth positions represent the type of provider of services. For renal providers, the coding is as follows: 0 in 3rd position = short-stay hospital; 20 in 3rd and 4th positions = long-term care hospital; 25 or 26 in 3rd and 4th positions = independent renal facilities; 33 in 3rd and 4th positions = pediatric (children's) hospital; and 35 in 3rd and 4th positions = hospital satellite renal facility (hospital satellites are owned and operated by hospitals).
For example: 01 0001 = hospital in Alabama; 05 2500 = independent in California; and 14 3500 = hospital satellite in Illinois.

Program management and medical information system (PMMIS)—A system which contains, in part, medical information on patients and the services that they have received during the course of their therapy. The ESRD PMMIS is an automated system of medical records that deals primarily with current Medicare eligible ESRD patients but also maintains historical information on persons no longer classified as ESRD patients by reason of death or successful transplantation. In addition, it contains information on ESRD facilities and facility reimbursement.

Receiving service—Includes all patients who receive either kidney dialysis or kidney transplant services.

Renal dialysis center—A hospital unit approved to furnish the full spectrum of diagnostic, therapeutic (including patient dialysis furnished directly or under arrangement) and rehabilitative services, except renal transplantation, for the care of ESRD dialysis patients.

Renal dialysis facility—A unit (hospital-based or free-standing) that is approved to furnish dialysis services to ESRD patients.

Renal network—An approved organized group of ESRD facilities in a designated area which, by their type and location and because of local referral patterns, collectively furnish the necessary care for ESRD patients in the population served.

Renal transplant center—A hospital unit which is approved to furnish direct transplantation and other medical and surgical specialty services for the care of the ESRD transplant patients, including inpatient dialysis furnished directly or under arrangement.

Restarted dialysis—A category of ESRD patients who, at one time, were on chronic maintenance dialysis, left that treatment category for reasons other than a transplant (e.g., recovered kidney function), then returned to dialysis.

Self-care services—A service provided by a dialysis facility or center where patients who have been trained to perform self-dialysis with little or no professional assistance dialyze.

Self-dialysis—Dialysis performed with little or no professional assistance by an ESRD patient who has completed an appropriate course of training.

Self-dialysis patients—Patients who have been trained in dialysis techniques and dialyze themselves in a dialysis facility or at home without professional assistance. Patients who are entirely responsible for administering their own dialysis treatments without professional support (except in emergency situations) are in this category.

Self-dialysis training and home training—Programs that train ESRD patients to perform self-dialysis or home dialysis with little or no professional assistance and train other individuals to assist patients in performing self-dialysis or home dialysis.

Special purpose facility—A renal dialysis facility which is approved to furnish dialysis at special locations on a short-term basis to a group of dialysis patients otherwise unable to obtain treatment in the geographical area. The special locations must be either special rehabilitative (including vacation) locations servicing ESRD patients temporarily residing there, or locations in need of ESRD facilities under emergency circumstances.

Staff-assisted dialysis—Dialysis performed by the staff of the renal dialysis center or facility.

Started for first time ever—A category of ESRD patients who have been newly diagnosed as having ESRD, and have begun chronic maintenance dialysis; or, newly diagnosed ESRD patients who, after being stabilized on dialysis, completed a course of self-dialysis training and have begun dialyzing at home or self-dialyzing at a facility.

Survey period—The period January 1 through December 31 of each year for which all ESRD facilities must complete form HCFA-2744, ESRD Facility Survey.

Training services—A program that trains ESRD patients to perform self-dialysis or home dialysis with little or no professional assistance, and trains other individuals to assist patients in performing self-dialysis or home dialysis.

Transient patients—Patients who are treated by facilities episodically (less than 51 percent of the survey period); e.g., vacationers.

Transplant—The surgical procedure that involves excising an organ from either a cadaver or from a living donor and implanting it in the patient.

Transplant center—A hospital unit which is approved to furnish direct transplantation and other medical and surgical specialty services for the care of the ESRD transplant patients, including inpatient dialysis furnished directly or under arrangement.

Transplants performed—The number of kidneys transplanted by donor source type; i.e., living-related or cadaveric.

Treatment setting—The type and location of the dialysis treatment being performed; i.e., self-dialysis (in-unit or home), self-dialysis training, or staff-assisted dialysis.

Appendix B
Entitlement provisions

The Social Security Amendments of 1972 extended Medicare coverage to individuals with end-stage renal disease beginning July 1973, the month the law became effective. End-stage renal disease is that stage of kidney impairment which is irreversible, cannot be controlled by conservative management alone, and requires dialysis or kidney transplantation to maintain life.

As soon as an individual knows that he needs maintenance dialysis treatments, he should apply for Medicare at any social security office. Social security representatives will help the applicant furnish all necessary information and answer questions he may have about the Medicare program. One of the essential forms to be completed will be a HCFA-2728, Chronic Renal Disease Medical Evidence Report. Notification of entitlement will be mailed later. If a person cannot come to the social security office, arrangements can be made so that a representative can visit the person to take an application.

When entitlement to hospital insurance (Part A) is established, the individual is automatically enrolled for supplementary medical insurance (Part B) to begin the same month, unless he specifies he does not want this coverage.

It is not in the best interest of most persons with end-stage renal disease to decline Part B coverage because many renal services, such as outpatient dialysis treatments, are covered only under Part B. A person qualifying for Medicare by means of the renal disease provision is eligible for the full range of benefits available under the health insurance program, not just for those services relating to renal care.

Nature of 1978 amendments

The Social Security Amendments of 1978 made a number of changes in the rules governing entitlement to Medicare based on end-stage renal disease. The changes were designed to encourage self-dialysis and transplantation surgery and to eliminate a number of inequities and difficulties that existed under previous law. These changes which were effective October 1, 1978 follow:

- Age 65 restriction removed—Prior to October 1, 1978, persons 65 years of age or over were ineligible for Medicare based on end-stage renal disease. This restriction has been eliminated.
- Application requirement—On claims for entitlement beginning October 1, 1978 and later, an application must be filed, with retroactivity limited to no more than 12 months before the month of filing.
- Early entitlement based on hospitalization for transplant surgery—Entitlement may begin during a month in the qualifying period if during that period the individual is hospitalized for transplant procedures, and the transplant takes place no later than 2 months thereafter.
- Waiver of qualifying period based on self-dialysis training—The qualifying period is waived for persons who during the qualifying period participate in self-dialysis training and are expected to complete the training successfully and self-dialyze thereafter.
- 36 months of post–transplant entitlement—Entitlement terminates 36 months (rather than 12 months, as under previous law) after the month in which an individual undergoes kidney transplantation.
- No second qualifying period after termination of R-HI (health insurance based on entitlement because of renal provisions of the law)—An individual whose entitlement to Medicare on the basis of ESRD has ended will be reentitled as of the month his new course of dialysis begins, subject to the filing of a timely application.

Requirements for eligibility

To qualify for Medicare under the renal provision a person must have end-stage renal disease and either: be entitled to a monthly insurance benefit under Title II of the Social Security Act (or an annuity under the Railroad Retirement Act); or be fully or currently insured under Social Security (railroad work may count); or be the spouse or dependent child of a person who meets at least one of these last two requirements. There is no minimum age for eligibility under the renal disease provision. An application for Medicare must be filed (effective October 1, 1978).

When entitlement begins

Provided all eligibility requirements are met, a person's Medicare entitlement based on the renal provision of the law begins with one of four occurrences.

- The third month after the month in which a course of dialysis is initiated. For example, if a course was initiated any time during the month of January, the date of entitlement would be April 1 (Table B-1).
- If earlier, the month a course of maintenance dialysis begins if the individual participates within the waiting period in a self-dialysis training program in an approved facility and is expected to complete the training successfully and self-dialyze thereafter (effective October 1, 1978).
- If earlier, the month of transplant.
- If earlier, the month an individual is admitted to an approved hospital for procedures preliminary to a transplant, if the transplant takes place within the following 2 months. If the transplant is delayed more than 2 months, Medicare coverage will begin the second month prior to the month the actual transplant takes place, or if earlier, the first day of the third month after maintenance dialysis began (effective October 1, 1978).

When entitlement ends

A person's entitlement to this protection terminates with the earliest of the following events:

- The day of death; or
- The last day of the 12th month after a person no longer requires maintenance dialysis treatments; or
- The last day of the 36th month after the month in which the individual receives a kidney transplant. If within 36 months after transplantation the person requires another transplant or returns to dialysis, there is no interruption in entitlement (effective October 1, 1978).

Table B-1
Effective date chart for patients applying for ESRD benefits

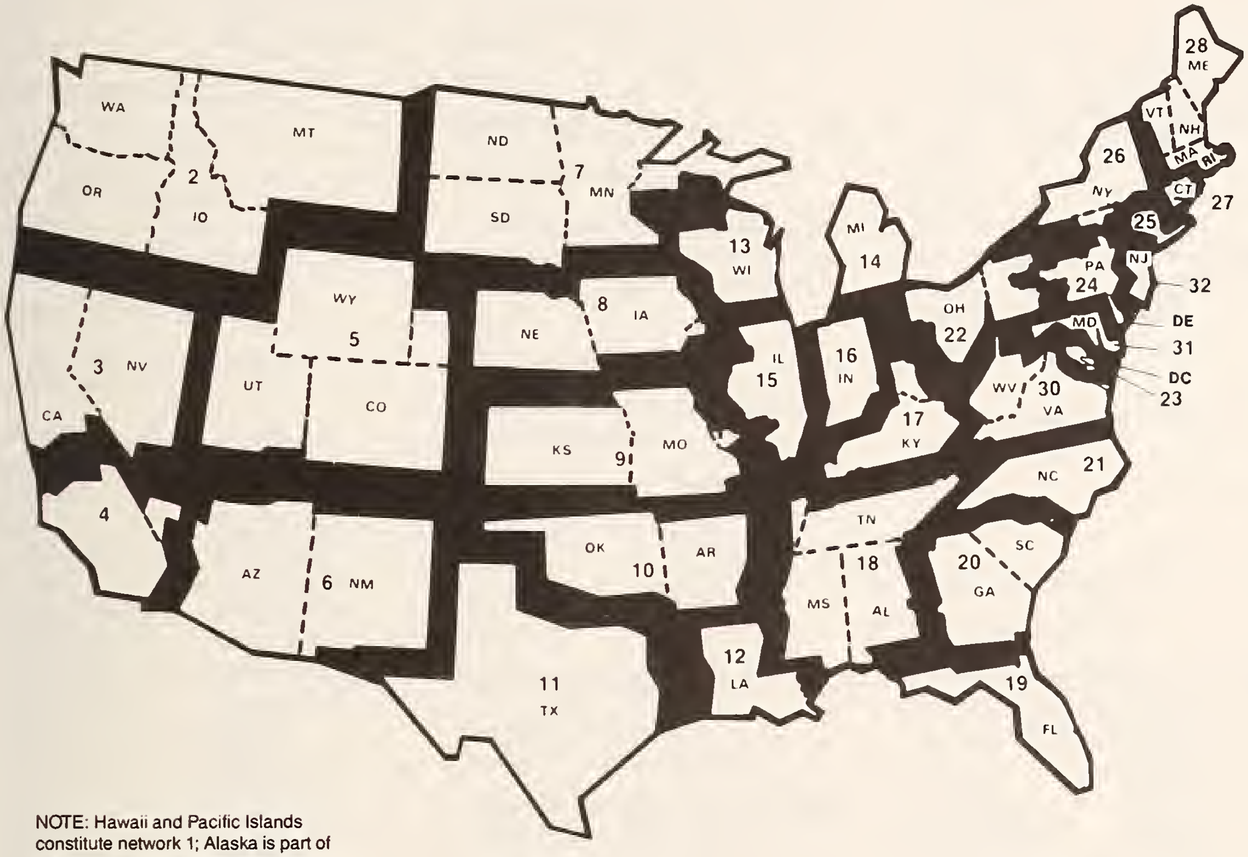
Regular course of dialysis initiated	Date of entitlement
January	April 1
February	May 1
March	June 1
April	July 1
May	August 1
June	September 1
July	October 1
August	November 1
September	December 1
October	January 1
November	February 1
December	March 1

Appendix C

End-stage renal disease network areas

Figure C-1

States included in the 32 end-stage renal disease networks



NOTE: Hawaii and Pacific Islands constitute network 1; Alaska is part of network 2; and Puerto Rico and Virgin Islands constitute network 29.

Appendix D

Designated end-stage renal disease networks

The following is an excerpt from the *Federal Register*, Volume 41, Number 108, June 3, 1976, that provides a listing of end-stage renal disease networks.

ESRD NETWORK NO. 1

American Samoa
Guam
Hawaii
The Trust Territory of the Pacific Islands

ESRD NETWORK NO. 2

The State of Alaska
The State of Idaho
The State of Montana
The State of Oregon
The State of Washington

ESRD NETWORK NO. 3

The following counties in Northern California:

Alameda
Alpine
Amador
Butte
Calaveras
Colusa
Contra Costa
Del Norte
El Dorado
Fresno
Glenn
Humboldt
Lake
Lassen
Madera
Marin
Mariposa
Mendocino
Merced
Modoc
Mono
Monterey
Napa
Nevada
Placer
Plumas
Sacramento
San Benito
San Francisco
San Joaquin
San Mateo
Santa Clara
Santa Cruz
Shasta
Sierra
Siskiyou
Solano
Sonoma
Stanislaus
Sutter
Tehama
Trinity
Tuolumne
Yolo
Yuba

The State of Nevada excluding Clark county which is included in Network area 4.

ESRD NETWORK NO. 4

The following counties in Southern California:

Imperial
Inyo
Kern
Kings
Los Angeles
Orange
Riverside
San Bernardino
San Diego
San Luis Obispo
Santa Barbara
Tulare
Ventura

The following county in Southern Nevada:

Clark

ESRD NETWORK NO. 5

The State of Colorado

The State of Utah excluding the Navaho Reservation portion of San Juan County which is in Network area 6.

The State of Wyoming

The following counties in the State of Nebraska:

Banner
Box Butte
Cheyenne
Dawes
Deuel
Garden
Kimball
Morrill
Scotts Bluff
Sheridan
Sioux

ESRD NETWORK NO. 6

The State of Arizona
The State of New Mexico

The Navaho Reservation portion of San Juan County, Utah.

ESRD NETWORK NO. 7

The State of Minnesota
The State of North Dakota
The State of South Dakota

The following counties in the State of Michigan:

Alger
Baraga
Delta
Dickinson
Gogebic
Houghton
Iron
Keweenaw
Marquette
Menominee
Ontonagon
Schoolcraft

The following counties in the State of Wisconsin:

Ashland
Bayfield
Burnett
Douglas
Iron
Price
Sawyer
Washburn

ESRD NETWORK NO. 8

Composed of:

The State of Iowa

The State of Nebraska excluding the following counties which are included in Network area 5:

Banner
Box Butte
Cheyenne
Dawes
Deuel
Garden
Kimball
Morrill
Scotts Bluff
Sheridan
Sioux

The following counties in the State of Illinois:

Henry
Mercer
Rock Island

ESRD NETWORK NO. 9

The State of Kansas

The State of Missouri excluding the following counties which are included in Network area 18:

Dunklin
Mississippi
New Madrid
Pemiscot
Scott
Stoddard

The following counties in the State of Illinois:

Clinton
Madison
Monroe
St. Clair

ESRD NETWORK NO. 10

The State of Arkansas excluding the following counties which are included in Network area 18:

Crittenden
Mississippi

The State of Oklahoma

ESRD NETWORK NO. 11

The State of Texas

ESRD NETWORK NO. 12

The State of Louisiana

ESRD NETWORK NO. 13

The State of Wisconsin excluding the following counties which are included in Network area 7:

Ashland
Bayfield
Burnett
Douglas
Iron
Price
Sawyer
Washburn

ESRD NETWORK NO. 14

The State of Michigan excluding the following counties which are included in network area number 7:

Alger
Baraga
Delta
Dickinson
Gogebic
Houghton
Iron
Keweenaw
Marquette
Menominee
Ontonagon
Schoolcraft

ESRD NETWORK NO. 15

The State of Illinois excluding the following counties which are included in Network area 8:

Henry
Mercer
Rock Island

and the following counties which are included in Network area 9:

Clinton
Madison
Monroe
St. Clair

ESRD NETWORK NO. 16

The State of Indiana

ESRD NETWORK NO. 17

The State of Kentucky

The following counties in the State of Ohio:

Adams
Brown
Butler
Champaign
Clark
Clermont
Clinton
Darke
Greene
Hamilton
Highland
Miami
Montgomery
Preble
Shelby
Warren

ESRD NETWORK No. 18

The State of Alabama excluding the following county which is included in network area number 20.

Russell

The State of Mississippi
The State of Tennessee

The following counties in the State of Arkansas:

Crittenden
Mississippi

The following counties in the State of Georgia:

Catoosa
Dade
Walker

The following counties in the State of Missouri:

Dunklin
Mississippi
New Madrid
Pemiscot
Scott
Stoddard

The following counties in the State of Virginia:

Scott
Washington

ESRD NETWORK NO. 19

The State of Florida

ESRD NETWORK NO. 20

The State of Georgia excluding the following counties which are included in network area number 18.

Catossa
Dade
Walker

The State of South Carolina

The following county in the State of Alabama:

Russell

ESRD NETWORK NO. 21

The State of North Carolina

ESRD NETWORK NO. 22

Composed of the State of Ohio excluding the following counties which are included in network area number 17.

Adams
Brown
Butler
Champaign
Clark
Clermont
Clinton
Darke
Greene
Hamilton
Highland
Miami
Montgomery
Preble
Shelby
Warren

The following counties of Western Pennsylvania:

Allegheny
Armstrong
Beaver
Bedford
Blair
Butler
Cambria
Cameron
Clarion
Crawford
Elk
Erie
Fayette
Forest
Fulton
Greene
Huntingdon
Indiana
Lawrence
McKean
Mercer
Potter
Somerset
Venango
Warren
Washington
Westmoreland

ESRD NETWORK NO. 23

The District of Columbia

The following counties in the State of Virginia:

Arlington
Fairfax
Loudoun
Prince William

The following counties in the State of Maryland:

Calvert
Charles
Montgomery
Prince Georges
St. Mary's

ESRD NETWORK NO. 24

The State of Delaware

The following counties of Eastern Pennsylvania:

Adams
Berks
Bucks
Carbon
Centre
Chester
Clearfield
Clinton
Columbia
Cumberland
Dauphin
Delaware
Franklin
Jefferson
Juniata
Lackawanna
Lancaster
Lebanon
Lehigh
Luzerne
Lycoming
Mifflin
Monroe
Montgomery
Montour
Northampton
Northumberland
Perry
Pike
Philadelphia
Schuylkill
Snyder
Union
Wayne
Wyoming
York

ESRD NETWORK NO. 25

The following counties of Metropolitan New York:

Bronx
Dutchess
Kings
Nassau
New York
Orange
Putnam
Queens
Richmond
Rockland
Suffolk
Sullivan
Ulster
Westchester

ESRD NETWORK NO. 26

The State of New York excluding the following counties which are included in Network area 25:

Bronx
Dutchess
Kings
Nassau
New York
Orange
Putnam
Queens
Richmond
Rockland
Suffolk
Sullivan
Ulster
Westchester

The following counties in the State of Pennsylvania:

Bradford
Susquehanna
Sullivan
Tioga

ESRD NETWORK NO. 27

The State of Connecticut

ESRD NETWORK NO. 28

The State of Maine
The State of Massachusetts
The State of New Hampshire
The State of Rhode Island
The State of Vermont

ESRD NETWORK NO. 29

Puerto Rico
Virgin Islands

ESRD NETWORK NO. 30

The State of Virginia excluding the following counties which are included in Network area 18:

Scott
Washington

and the following counties which are included in Network area 23:

Arlington
Fairfax
Loudoun
Prince William

The State of West Virginia

ESRD NETWORK NO. 31

The State of Maryland excluding the following counties which are included in Network area 23:

Calvert
Charles
Montgomery
Prince Georges
St. Mary's

ESRD NETWORK NO. 32

The State of New Jersey

[FR Doc. 76-15924 Filed 6-2-76; 8:45 am]

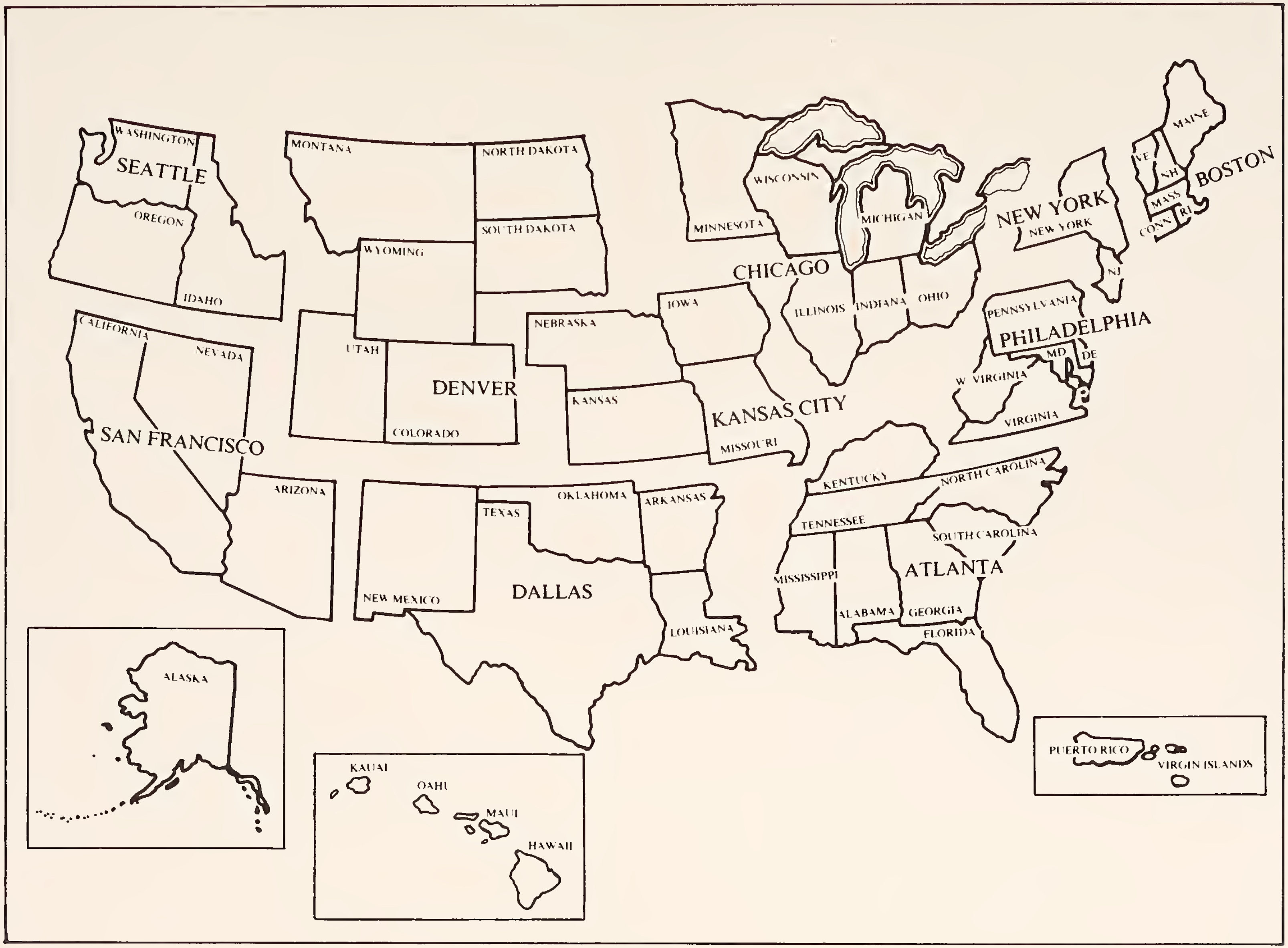
Appendix E

End stage renal disease data sources

Form title and number	Primary purpose	PMMIS function	Research potential
Outpatient Bill (HCFA-1483)	Billing	Dialysis incidence	Prevalence and outcome analyses
Outpatient Service (UB-2)	Billing	Dialysis incidence	Prevalence and outcome analyses
Inpatient Bill (HCFA-1453)	Billing	Inpatient stay diagnosis	Morbidity
Inpatient Service (UB-2)	Billing	Inpatient stay diagnosis	Morbidity
ESRD Transplant Information (HCFA-2745-U3)	Clinical information	Transplant incidence	Clinical research: Efficacy of treatment, prevalence, and outcome analyses
ESRD Transplant Followup (no number)	Clinical rehabilitative information	Patient and graft survival and rehabilitation	Clinical research: Efficacy of treatment and outcome analyses
ESRD Death Notification (HCFA-2746)	Death incidence	Death incidence, cause of death	Outcome analyses
CRD Medical Evidence Report (HCFA-2728-U4)	Entitlement	Identification of primary disease and first date of treatment	Incidence and outcome analyses
ESRD Facility Survey (HCFA-2744)	Number of Medicare and non-Medicare patients by modality	National overview of Medicare and non-Medicare patients by modality	Incidence, prevalence, and outcome analyses

Appendix F
Health Care Financing Administration Regional Office Boundaries

Figure F-1



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